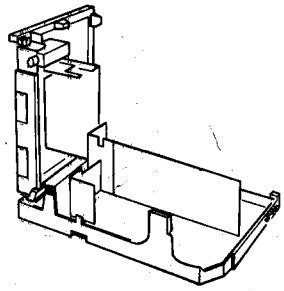
PHILIPS 28PT4513

MODEL

SERVICE MANUAL

Service
Service
Service

MD1.2E
AA



Service Manual

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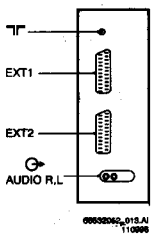
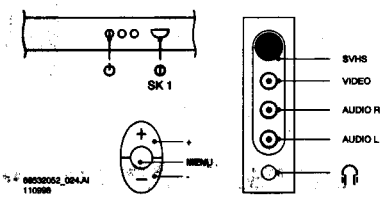
1. Technical specifications

Mains voltage	: 220-240V AC (±10%)
Power consumption	
nominal output power (Watt)	: 100 (21" 90°); 130 (110° SF 4:3); 150 (110° SF 16:9)
peak output power (Watt)	: 160 (21" 90°); 180 (110° SF 4:3); 220 (110° SF 16:9)
standby (Watt)	: 3 (±10%)
Mains frequency	: 50 Hz (±10%)
Pull-in range colour synchronisation	: > ± 300Hz
Pull-in range horizontal synchronisation	: > ± 600Hz

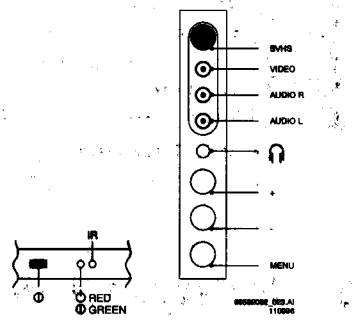
2. Connection facilities and Chassis overview



Rear connections



Front + Top control + Side I/O



Front + Side control + Side I/O

Specification of the terminal sockets

REAR

EXT1 - CVBS (in/out) + RGB (in) - tuner at output

1	-	Audio ⊖ R (0.5V_{RMS} ≤ 1kΩ)
2	-	Audio ⊖ R (0.2-2V_{RMS} ≥ 10kΩ)
3	-	Audio ⊖ L (0.5V_{RMS} ≤ 1kΩ)
4	-	Audio ⊥
5	-	Blue ⊥
6	-	Audio ⊖ L (0.2-2V_{RMS} ≥ 10kΩ)
7	-	Blue ⊖ (0,7V_{pp}/75Ω)
8	-	CVBS status(0-2V: INT; 4,5-7V: EXT1-16/9; 9.5-12V:EXT1-4/3)
9	-	Green ⊥
10	-	
11	-	Green ⊖ (0,7V_{pp}/75Ω)
12	-	
13	-	Red ⊥
14	-	RGB status ⊥
15	-	Red ⊖ (0,7V_{pp}/75Ω)
16	-	RGB status (0-0,4V: INT;1-3V: EXT1/75Ω)
17	-	CVBS ⊥
18	-	CVBS ⊥
19	-	CVBS ⊖ (1V_{pp}/75Ω)
20	-	CVBS ⊖ (1V_{pp}/75Ω)
21	-	Earth screen

EXT2 - CVBS (in/out) + SVHS (in) - Input: EXT2 then output = tuner; input: other then output = input

1	-	Audio ⊖ R (0.5V_{RMS} ≤ 1kΩ)
2	-	Audio ⊖ R (0.2-2V_{RMS} ≥ 10kΩ)
3	-	Audio ⊖ L (0.5V_{RMS} ≤ 1kΩ)
4	-	Audio ⊥
5	-	
6	-	Audio ⊖ L (0.2-2V_{RMS} ≥ 10kΩ)
7	-	
8	-	CVBS status ⊖ (0-2V: INT; 4,5-7V: EXT2-16/9;9.5-12V:EXT2-4/3)
9	-	
10	-	
11	-	
12	-	
13	-	C ⊥
14	-	
15	-	C ⊖ (300mV_{pp}/75Ω)
16	-	
17	-	CVBS ⊥
18	-	CVBS ⊥
19	-	CVBS ⊖ (1V_{pp}/75Ω)
20	-	CVBS/Y ⊖ (1V_{pp}/75Ω)
21	-	Earth screen

Cinch - audio out

- ⊙ CINCH Audio L (red) ⊖ (0.5V_{RMS} < 1kΩ)
- ⊙ CINCH Audio R (white) ⊖ (0.5V_{RMS} < 1kΩ)

FRONT

Audio/video in

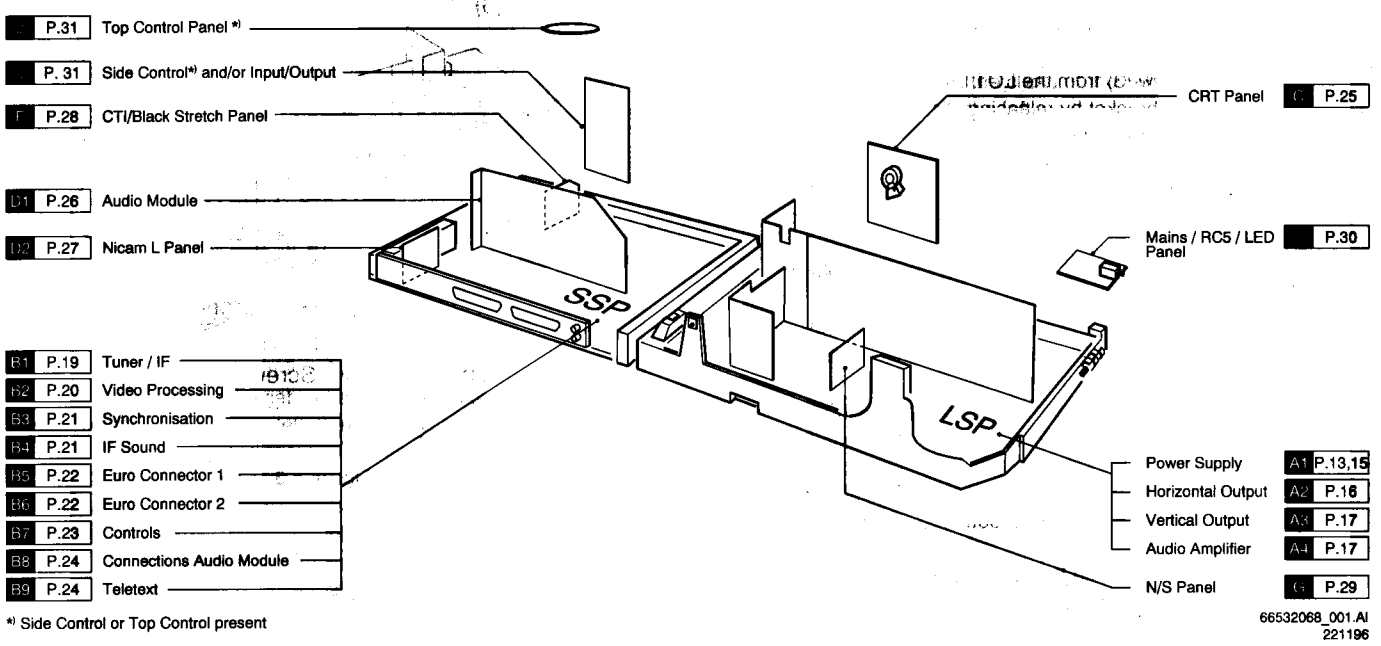
- ⊙ CINCH CVBS ⊖ (1V_{pp}/75Ω)
- ⊙ CINCH Audio L (red) ⊖ (2V_{RMS} ≥ 10kΩ)
- ⊙ CINCH Audio R (white) ⊖ (2V_{RMS} ≥ 10kΩ)

Headphone

8-600Ω

SVHS

1	-	⊥
2	-	⊥
3	-	Y ⊖ (1V_{pp}/75Ω)
4	-	C ⊖ (0,3V_{pp}/75Ω)


P.31 Top Control Panel *)
P. 31 Side Control*) and/or Input/Output
P.28 CTI/Black Stretch Panel
D1 P.26 Audio Module
D2 P.27 Nicam L Panel
B1 P.19 Tuner / IF
B2 P.20 Video Processing
B3 P.21 Synchronisation
B4 P.21 IF Sound
B5 P.22 Euro Connector 1
B6 P.22 Euro Connector 2
B7 P.23 Controls
B8 P.24 Connections Audio Module
B9 P.24 Teletext
CRT Panel C P.25
Mains / RC5 / LED Panel P.30
SSP
LSP
Power Supply A1 P.13,15
Horizontal Output A2 P.16
Vertical Output A3 P.17
Audio Amplifier A4 P.17
N/S Panel G P.29
*) Side Control or Top Control present
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3. Safety instructions for repairs, Maintenance instructions, Warnings and Notes

Safety instructions for repairs

1. Safety regulations require that during a repair:
- the set should be connected to the mains via an isolating transformer;
- safety components, indicated by the symbol ▲ should be replaced by components identical to the original ones;
- when replacing the CRT, safety goggles must be worn.

2. Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points:
- As a strict precaution, we advise you to resolder the solder joints through which the horizontal deflection current is flowing, in particular:
  - all pins of the line output transformer (LOT);
  - fly-back capacitor(s);
  - S-correction capacitor(s);
  - line output transistor;
  - pins of the connector with wires to the deflection coil;
  - other components through which the deflection current flows.

Note:
This resoldering is advised to prevent bad connections due to metal fatigue in solder joints and is therefore only necessary for television sets older than 2 years.
- The wire trees and EHT cable should be routed correctly and fixed with the mounted cable clamps.
- The insulation of the mains lead should be checked for external damage.
- The mains lead strain relief should be checked for its function in order to avoid touching the CRT, hot components or heat sinks.
- The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets which have a mains isolated power supply).
  This check can be done as follows:
  - unplug the mains cord and connect a wire between the two pins of the mains plug;
  - set the mains switch to the on position (keep the mains cord unplugged !);
  - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ;
  - switch off the TV and remove the wire between the two pins of the mains plug.
- The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

Maintenance instructions

It is recommended to have a maintenance inspection carried out by a qualified service employee. The interval depends on the usage conditions:

- when the set is used under normal circumstances, for example in a living room, the recommended interval is 3 to 5 years;
- when the set is used in circumstances with higher dust, grease or moisture levels, for example in a kitchen, the recommended interval is 1 year.

The maintenance inspection contains the following actions:

- execute the above mentioned "general repair instruction";
- clean the power supply and deflection circuitry on the chassis;
- clean the picture tube panel and the neck of the picture tube.

Warnings

1. In order to prevent damage to ICs and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx. 30s).

2. **ESD**

   All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth ot the unit.
   Keep components and tools also at this same potential.

3. Together with the deflection unit and any multipole unit, the flat square picture tubes used form an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.

4. Be careful when taking measurements in the high-voltage section and on the picture tube.

5. Never replace modules or other components while the unit is switched on.

6. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

Notes

1. The direct voltages and oscillograms should be measured with regard to the tuner earth (⊥), or hot earth (⊥) as this is called.

2. The direct voltages and oscillograms shown in the diagrams should be measured in the **Service Default Mode** (see chapter 8) with a colour bar signal and stereo sound (L:3 kHz, R:1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.

3. Where necessary, the oscillograms and direct voltages are measured with (⊤) and without aerial signal (⊁).
   Voltages in the power supply section are measured both for normal operation (⏻) and in standby (⏻). These values are indicated by means of the appropriate symbols.

4. The picture tube PWB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

5. The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

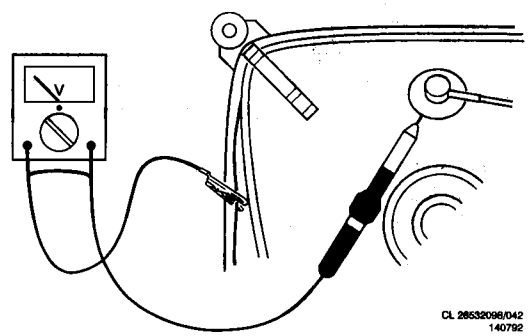

Figure 3.1

6. DOLBY SURROUND
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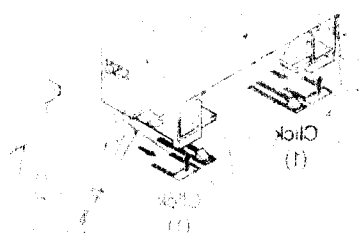


4. Mechanical instructions

The MD1.2E chassis has two different mechanical executions.

4.1 Styling with top control and side input/output (also applicable for MD1.1E Widescreen)

Removing the rear cover

1. First all screws on the rear cover have to be removed.
   - 4 Screws are located at each corner of the cabinet.
   - 2 Screws are located at the left and right bottom corners of the rear cover.
   - 4 Screws are fixed at the 4 corners of the I/O panel with the Euroconnectors and aerial input.
2. The rear cover is now held in position by 6 clicks between the cabinet and the rear cover. There are 2 clicks at the left, 2 at the right and 2 at the top. After loosening all clicks (by releasing them with a screwdriver), the rear cover can be removed.
3. The cover plate on the I/O panel with the Euroconnectors and aerial input can be removed in the following way: remove the screw in the middle, release the click connection at the bottom and lift the cover plate.

Process position

The process position provides easier access to the entire chassis.

1. Release the mains cord from its fixation brackets.
2. Push back the clicks between bottom plate and rear cover and pull the cabinet at the same time backwards.

For some service positions cables may have to be removed from their cable clamps and channels.
Afterwards, put the cables back in their original position.

Service positions

Small Signal Panel (SSP) component side (Figure 4.1)

1. Push down the clicks of the SSP bracket (1) and shift the SSP to the left.
2. Pull up the SSP and tilt the SSP counter clockwise to a horizontal position (180° with Large Signal Panel (LSP)).
3. Put the SSP in the clicks (2) marked "Service" on the bottom plate.

When all cables on the SSP are disconnected, the SSP can also be removed from its bracket (**Figure 4.2**), providing better access to component and copper side.

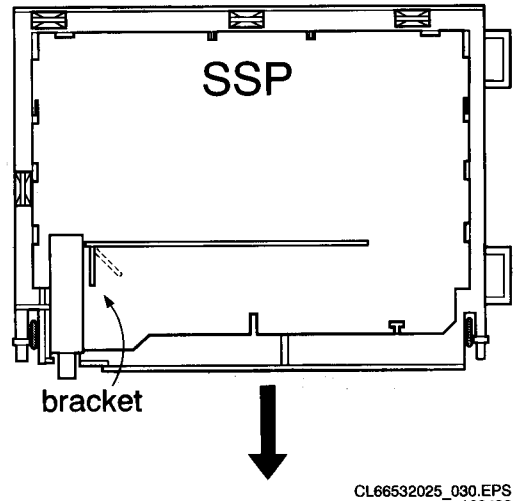


Figure 4.2

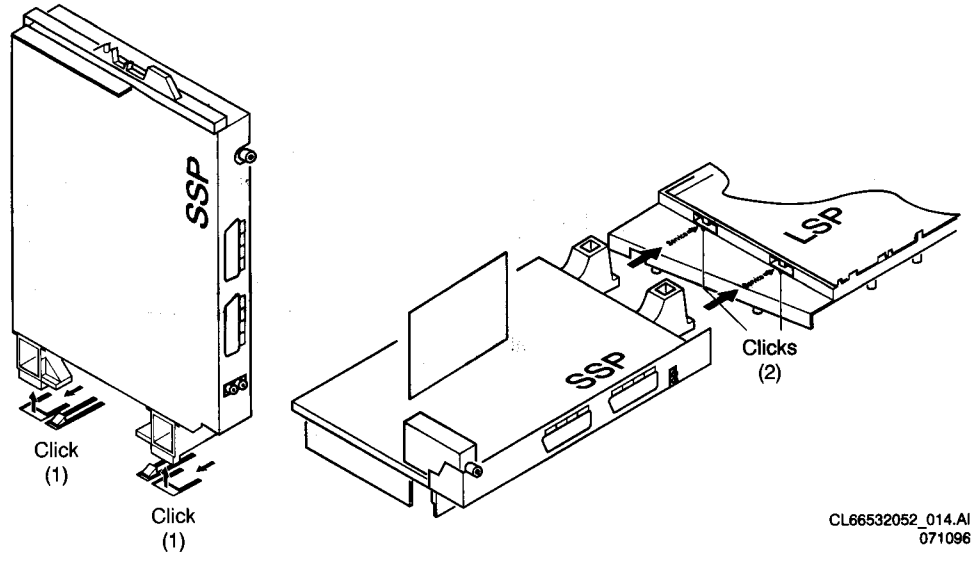


Figure 4.1

LSP component side (Figure 4.3)

1. Put the SSP in the horizontal service position as described above.
2. Remove screw (3) from the LOT bracket.
3. Remove the bracket by releasing click (4) and pulling the bracket upwards.
4. Release clicks (5) and (6).
5. Lift the LSP PWB out of its bracket (indicated by the arrow) and pull it a little back.

Warning! *The heat sinks are not connected to ground.*

LSP copper side *with table/workbench* (Figure 4.4)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on LSP).
2. If necessary, disconnect the cable on the left loudspeaker.
3. Lift the LSP from its bracket as described above (LSP component side).
4. Turn the LSP underneath the CRT panel (keep cable S15/L15 UNDER the audio module) as indicated by the arrow (7).

The LSP now rests on the bottom plate, held in place by the cable clamp on the heat sink and the LOT bracket.

Warning! *Be careful not to damage the CRT-panel or picture tube neck.*
The heat sinks are not connected to ground.

SSP and LSP copper side *without table/workbench* (Figure 4.5)

For this service position MD1 cable extension kit (service code number 4822 320 11695) is required.

1. Break the service pin (marked M1 - see Figure 4.3) from its position at the right hand side of the bottom plate.
2. Disconnect the cable to the degaussing coil (yellow connector L02 on LSP) and the cable on the left loudspeaker.
3. Remove cables S10/L10, S11/L11 and S15/L15 from LSP to SSP and cable I28/L28 from Audio module to LSP.
4. Lift the LSP from its bracket as described earlier (LSP component side).
5. Put the LSP to the vertical position (Figure 4.5), copper side at the right hand, LOT above (8). For this position, special grooves are made in the bottom plate of the cabinet.
6. Fix the position of the LSP by putting the service pin between LSP (heat sink) and bottom plate (9). There are special holes in the heat sink and the bottom plate to put the service pin in.
7. Reconnect cable I28/L28.
8. Use the cables from the MD1 cable extension kit to reconnect connectors S10/L10, S11/L11 and S15/L15.

Warning! *All cables should be reconnected correctly.*

After use the service pin can be placed in the spare hole at the right hand side in the bottom plate.

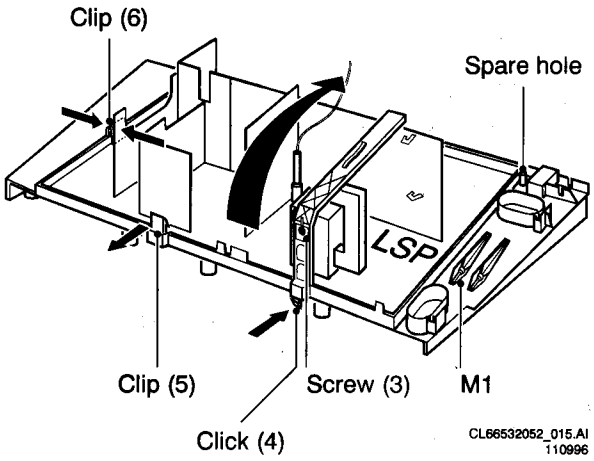


Figure 4.3

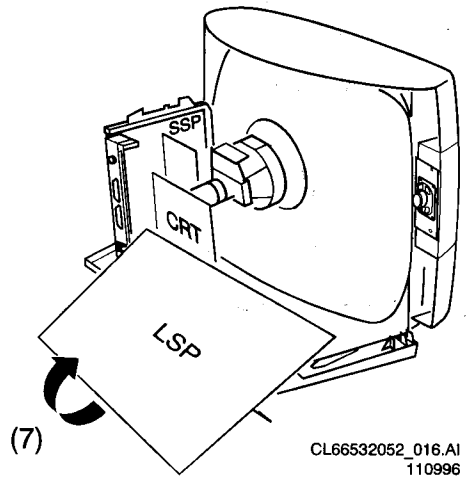


Figure 4.4

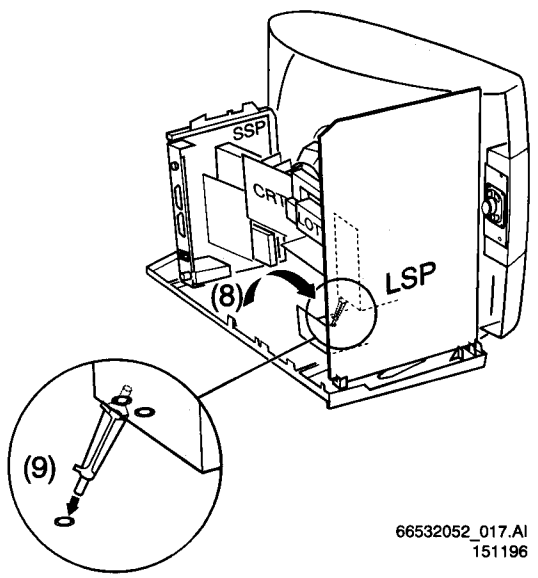


Figure 4.5

Accessing the module with mains switch, LED and RC5 receiver (Fig. 4.6)

1. Cut the tie rap of the degaussing coil at the left hand bottom side (10). Remove the degaussing coil in the left bottom corner from its fixation bracket (11) to get more space to handle the mains module.
2. Remove the red mains panel bracket by lifting the end and pulling it backwards (12).
3. To get more movement space, the left top of the cabinet can be pushed or pulled upwards (13).
4. The mains panel can now be removed.

Afterwards the degaussing coil should be retied at position (10).

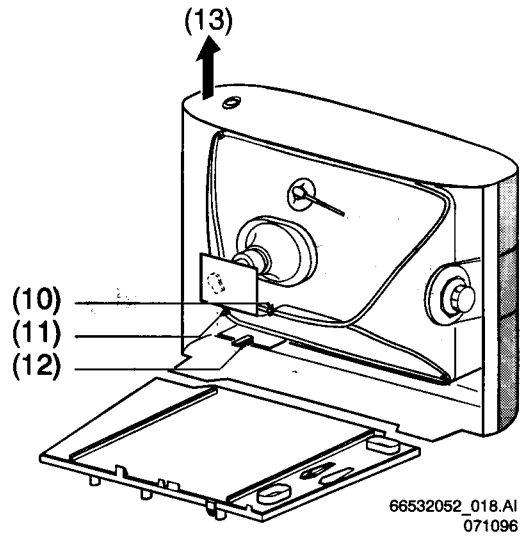


Figure 4.6

4.2 Styling with side control and side input/output (no top control)

Removing the rear cover

1. First all screws on the rear cover have to be removed.
   - 6 Screws are located at the corners of the cabinet.
   - 2 Screws are located at the left and right bottom of the rear cover.
   - 3 Screws are located just above, under and left of the cover plate of the I/O connections.

For some service positions cables may have to be removed from their cable clamps and channels. Afterwards, put the cables back in their original position.

Process position

The process position provides easier access to the entire chassis during the service positions.

1. The chassis can be lifted, pulled forward (± 5cm) and fixed in the bottom plate.
2. When the clicks between bottom plate rear cover are pushed back, the chassis and the bottom plate can be pulled backwards.

Service positions

SSP copper and component side, module servicing (Figure 4.7)

1. Release the click construction (14) between the SSP and LSP.
2. Lift the SSP a little and turn it to an angle of 135° (15) or 180° (16) from the LSP.
   This provides better access to the component side of the SSP and also allows for the removal of modules.

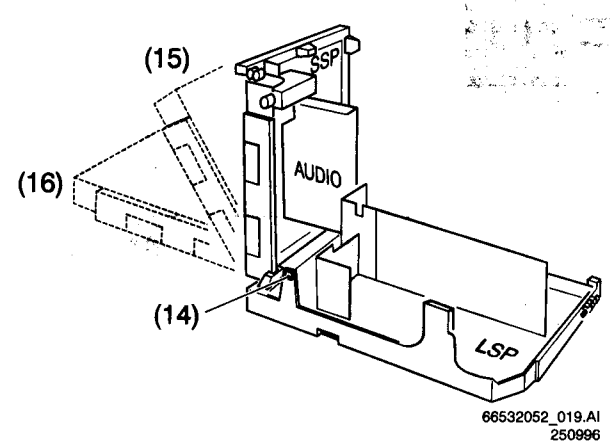


Figure 4.7

Service position with table/workbench (Fig. 4.8)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on the LSP).
2. Lift the chassis from the bottom plate and pull it backwards (17).
3. Turn the entire chassis around the CRT panel (18).
   The chassis rests on the SSP with the copper side of the LSP backwards.

Warning! *Be careful not to damage the CRT-panel or picture tube neck.*
The heat sinks are not connected to ground.

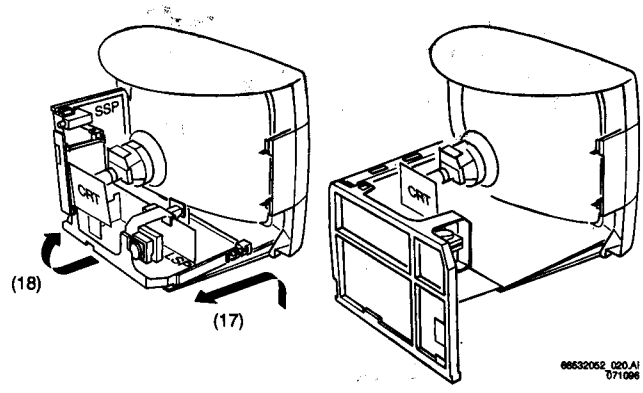


Figure 4.8

Service position (LSP copper side) without table/ workbench (Fig. 4.9)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on the LSP).
2. Lift the chassis from the bottom plate and turn it counter clockwise (19).
3. The SSP can be fixed with a screwdriver to the bottom plate (20). The copper side of the LSP can now be accessed.

Warning! *Be careful not to damage the CRT-panel or picture tube neck.*
The heat sinks are not connected to ground.

Small Signal Panel (Fig. 4.2)
First, remove all cables connected to the Small Signal Panel. The SSP can be removed by sliding it out of the SSP bracket (in the direction of the arrow).

Large Signal Panel (Fig. 4.10)
After removing the screw (21), and pushing back the clips (22), the LSP can be lifted out the bracket as indicated by the arrow.

Accessing the panel with mains switch, LED and RC5 receiver
The mains module is located in the middle of the set, below the picture tube.

1. Push the clicks between bottom plate and rear cover back and pull the chassis back as far as possible.
2. Release the click construction (14 - Fig. 4.7) between the SSP and LSP, lift the SSP a little and turn it to an angle of 180° (16 - see Fig. 4.7) from the LSP.
   The mains panel can now be accessed when reaching over the SSP/LSP.
3. Remove the 2 screws left and right on the mains panel bracket.
   The complete mains panel can now be removed by pulling it backwards.

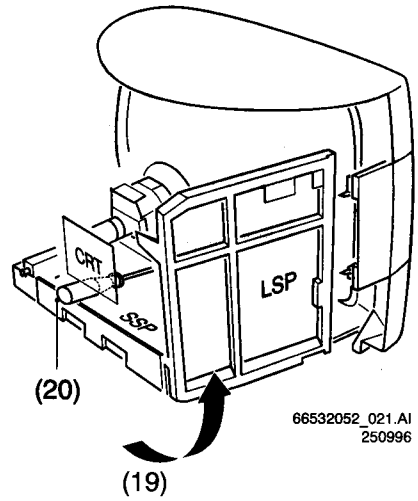


Figure 4.9

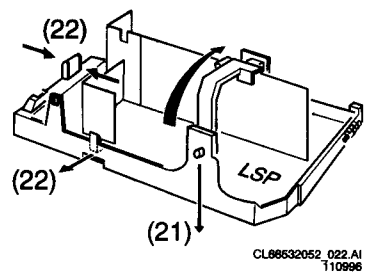
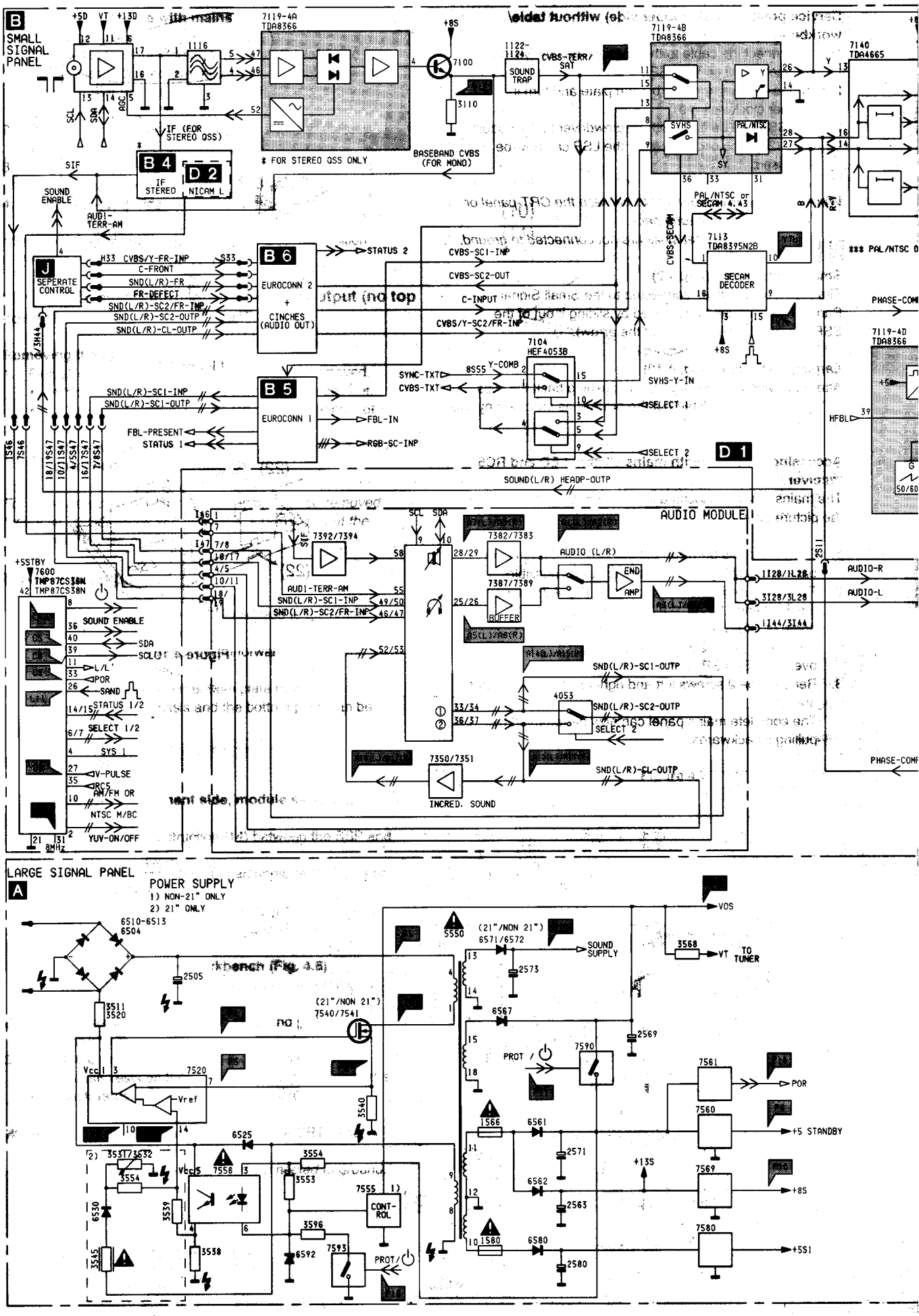
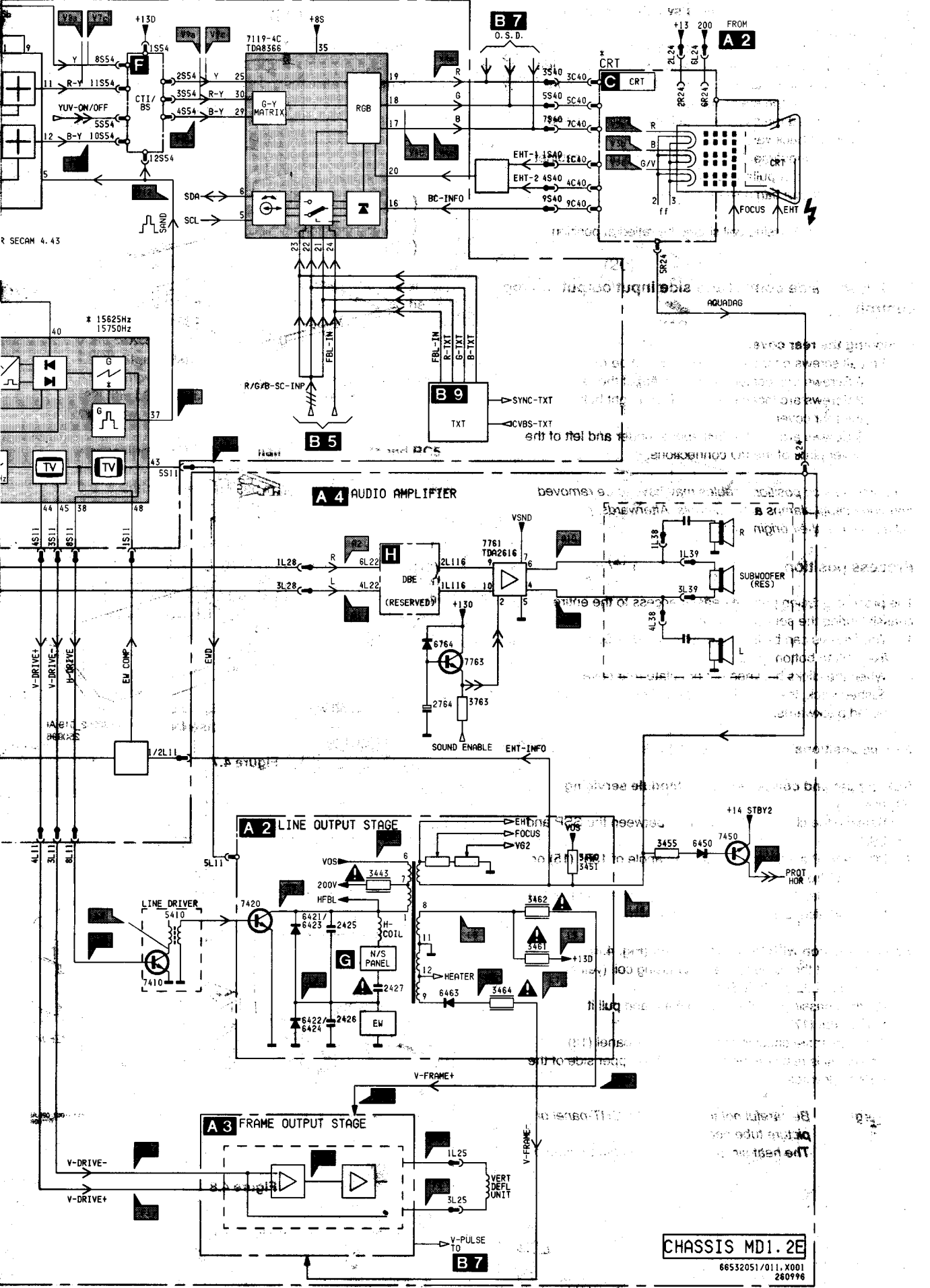
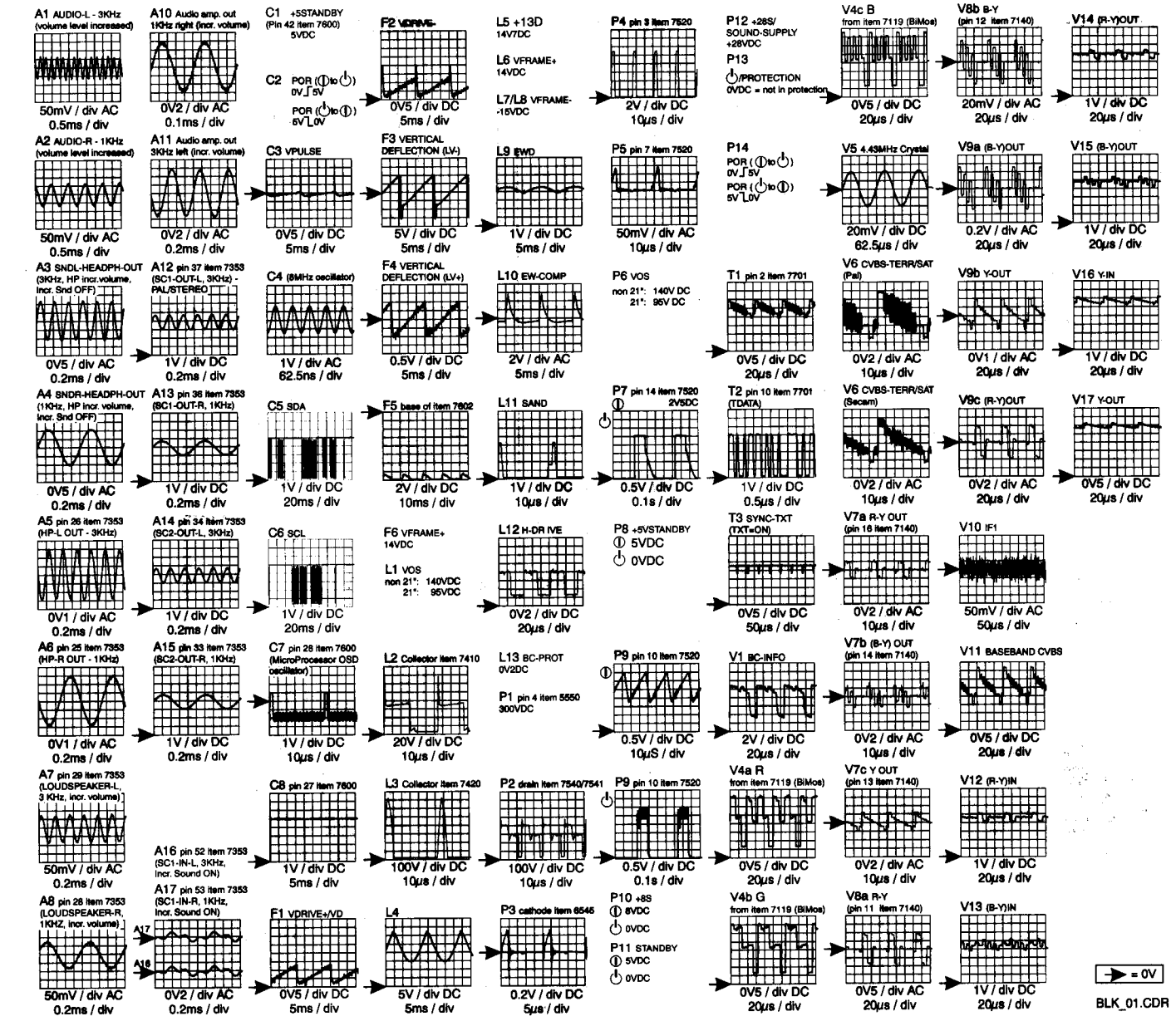


Figure 4.10

5. Block diagram / Blockschaltbild / Schéma-bloc




B 7
O.S.D.
FROM A 2
+13
200
CRT
C CRT
F
+13D
+8S
7119-4C
TDA8366
G-Y MATRIX
RGB
CTI/ BS
YUV-ON/OFF
SDA
SCL
SAND
BC-INFO
EHT-1
EHT-2
FOCUS
EHT
AQUADAG
R/G/B-SC-INP
FBL-IN
R-TXT
G-TXT
B-TXT
B 9
TXT
SYNC-TXT
CVBS-TXT
B 5
15625Hz
15750Hz
TV
A 4 AUDIO AMPLIFIER
VSND
7761
TDA2616
DBE
(RESERVED)
SUBWOOFER
(RES)
+130
6764
7763
2764
3763
SOUND ENABLE
ENT-INFO
V-DRIVE+
V-DRIVE-
H-DRIVE
EW COMP
EWD
A 2 LINE OUTPUT STAGE
VOS
200V
HFBL
LINE DRIVER
5410
7420
7410
6421/
6423
2425
H-COIL
N/S PANEL
2427
6422/
6424
2426
EW
EHT
FOCUS
VG2
3443
3451
3455
6450
7450
+14 STBY2
PROT HOR
3462
3461
+13D
HEATER
6463
3464
V-FRAME+
V-FRAME-
A 3 FRAME OUTPUT STAGE
VERT DEFL UNIT
V-PULSE TO B 7
CHASSIS MD1.2E
66532051/011.X001
280996



( ) CONNECTORS US...

6. Service Modes, DST, Error messages, Protections, Faultfinding and Repair tips

In this chapter the following paragraphs are included:

6.1 Test points
6.2 Service Modes and Dealer Service Tool (DST)
6.3 Error codes and "blinking LED" procedure
6.4 Protections
6.5 Fault finding and repair tips

6.1 Test points

The MD1 chassis is equipped with test points in the service printing. These test points are referring to the functional blocks:

* A1-A2-A3, etc.: Test points for the audio processing circuitry
* C1-C2-C3, etc.: Test points for the control circuitry
* F1-F2-F3, etc.: Test points for the frame drive and frame output circuitry
* L1-L2-L3, etc.: Test points for the line drive and line output circuitry
* P1-P2-P3, etc.: Test points for the power supply
* T1-T2-T3, etc.: Test point for the teletext circuitry
* V1-V2-V3, etc.: Test points for the video processing circuitry

6.2 Service modes and Dealer Service Tool (DST)

For easy installation and diagnosis the dealer remote control RC7150 is introduced. The RC7150 can be used for all new TV sets, including all set of the MD1 chassis. The RC7150 is also called Dealer Service Tool or DST. The ordering number of the DST (RC7150) is 4822 218 21232.

6.2.1 Installation features for the dealer

The dealer can use the RC7150 for programming the TV-set with presets, TV-settings, Dish settings.

10 Different program tables can be programmed into the DST via a GFL or MD2 TV-set (downloading from the GFL or MD2 to the DST; see GFL or MD2 service manuals) or by the DST-I (DST/PC interface; ordering code 4822 218 21277). For explanation of the installation features of the DST, the directions for use of the DST are recommended (For the MD1 chassis, download code 4 should be used).

6.2.2 Diagnose features for the servicer

The MD1.2 sets can be put in the two service modes via the DST RC7150. These are the Service Alignment Mode (SAM) and the Service Default Mode (SDM). SDM can also be entered by short circuiting the "service" pins on the SSP.

6.2.2.1 Service Default Mode (SDM)

Entering the SDM:
- By transmitting the "DEFAULT" command with the RC7150 Dealer Service Tool.
- By temporarily shorting pins S42 and S43 on the Small Signal Panel.

Exiting the SDM:
- Switch the set to stand-by (the error buffer is also cleared).

Note: *When the mains power is switched off while the set is in SDM, the set will enter to SDM immediately when the mains is switched on again.*

The SDM has the following pre-defined conditions for all microprocessor controlled tuning and linear functions:
- For recognition of the SDM "SER" is displayed at the top of the screen.
- Tuning at 475.25 MHz (Secam on Multi-France sets (with Nicam L), PAL on other sets).
- Volume level is set to 25% (of the maximum volume level). Other picture and sound settings are set to 50%.
- Auto switch off disabled (normally the set is automatically switched off when no video signal (IDENT) was received for 15 minutes).
- Sleep timer is disabled.
- All other controls operate normally.
- *When the microprocessor supports the "blinking LED" procedure (See 6.3) and an error code is present in the error buffer, the LED will blink the number of times, equal to the value of the last error code.*
  This function will also work when there is no sound or picture.

6.2.2.2 Service Alignment Mode (SAM)

Entering SAM:
- By transmitting the "ALIGN" command with the RC7150 Dealer Service Tool (this works both while the set is in normal operation mode or in the SDM).
- By pressing the "MENU" and "-" key on the local keyboard simultaneously when the set is in SDM.

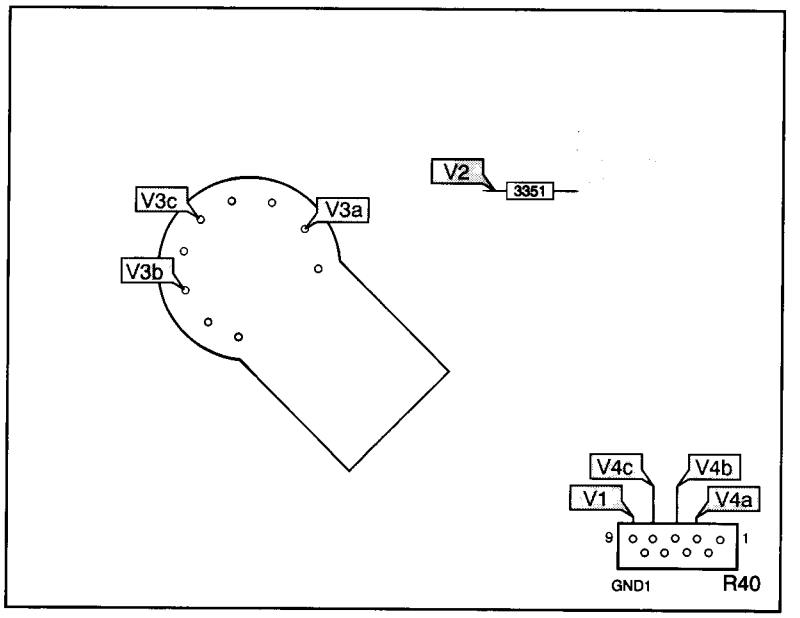
Exiting SAM:
- Switch the set to stand-by.

Note: *When the mains power is switched off while the set is in SAM, the set will enter SDM immediately when the mains is switched on again.*

In the SAM the following information is displayed on the screen:
- Software version (the software version of the microprocessor in the set is displayed. This software version identification corresponds with the software versions in the Software Survey as published in the Product Survey.
- Error code buffer (see paragraph 6.3).
- Options (see paragraph 8.4).
- Alignment and geometry information (see paragraph 8.2.1, 8.3.1 and 8.3.2).

Testpoint overview / Testpunkt Übersicht / Relevé des points de test

CRT panel / CRT-Platine / Platine tube cathodique



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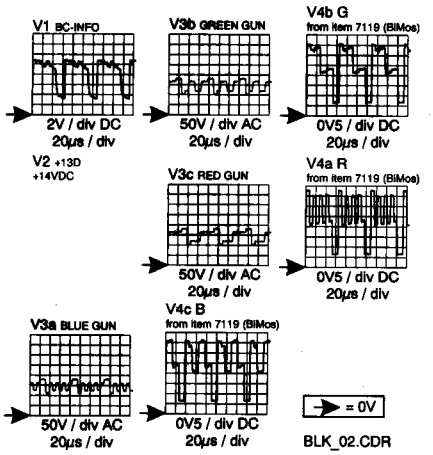
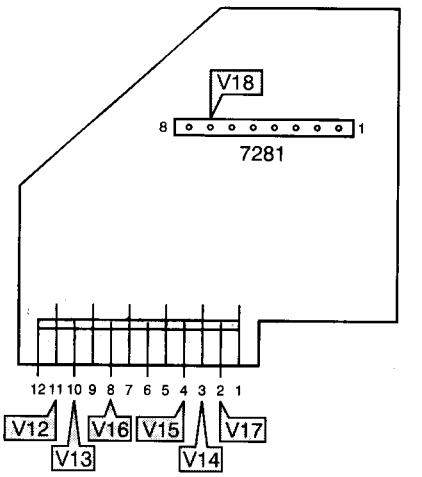
181196



CTI/Black Stretch panel / CTI/Black Stretch Platine / Platine CTI/Black Stretch



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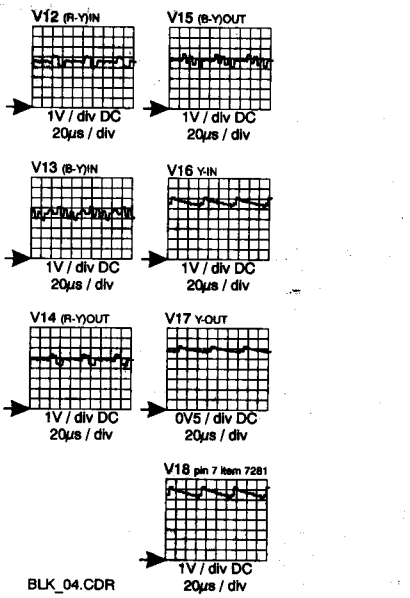
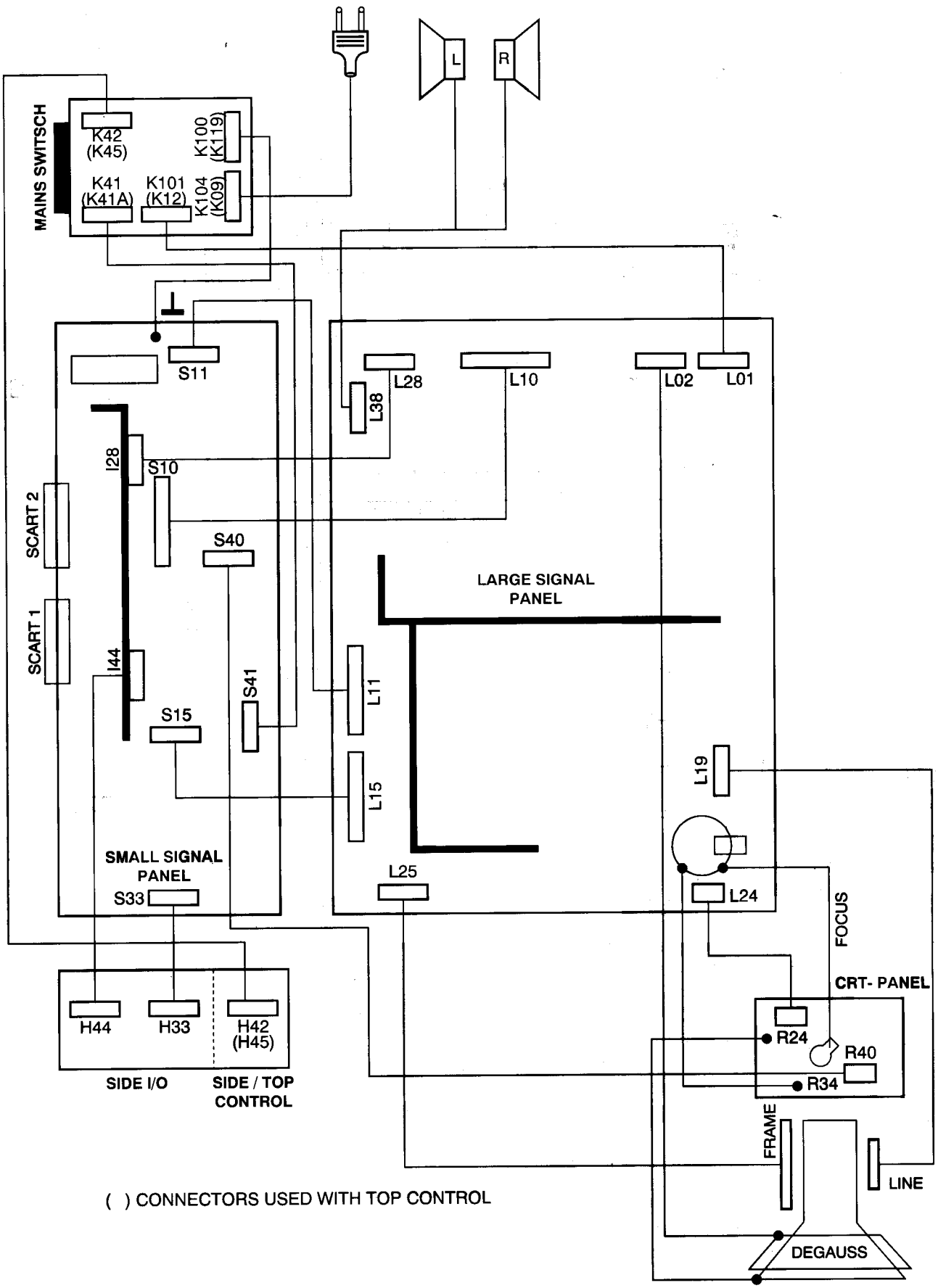


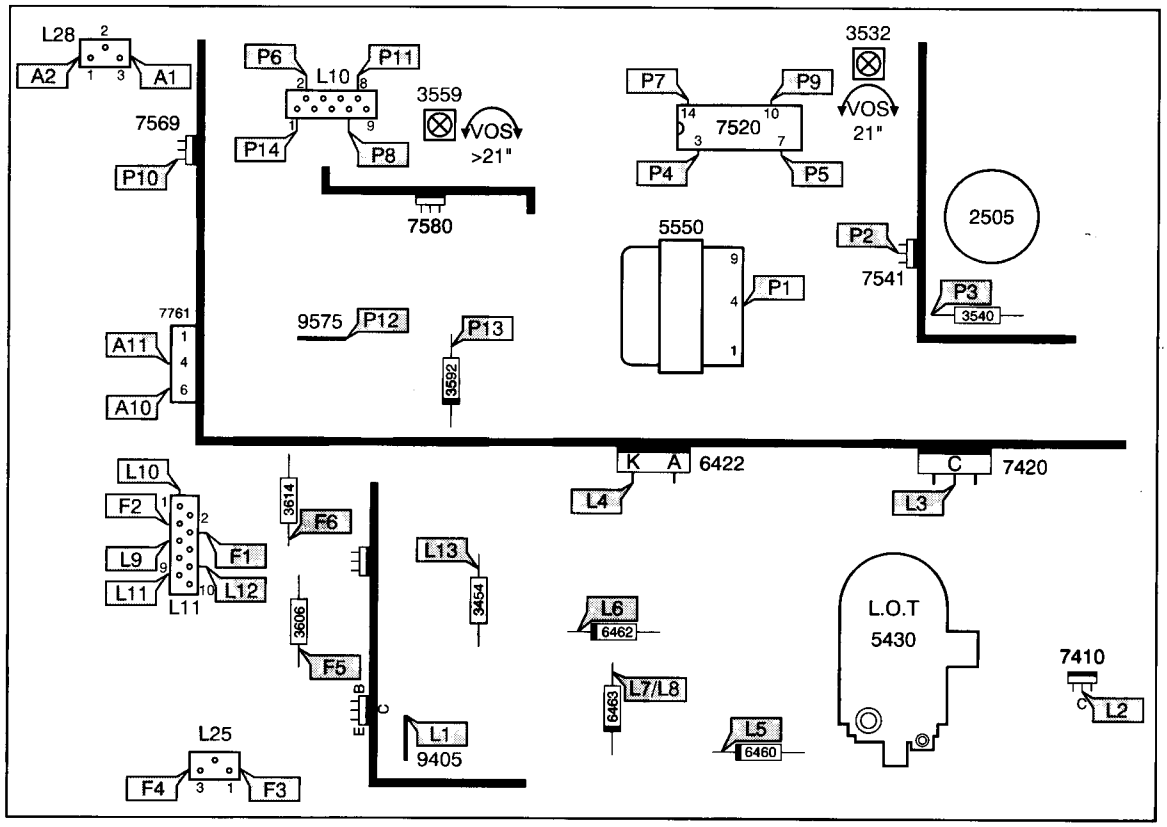
Wiring diagram / Verdrahtungsschema / Schéma de câblage



( ) CONNECTORS USED WITH TOP CONTROL

Testpoint overview / Testpunkt Übersicht / Relevé des points de test

Large signal panel / Groß-Signal Platine / Platine forts signaux



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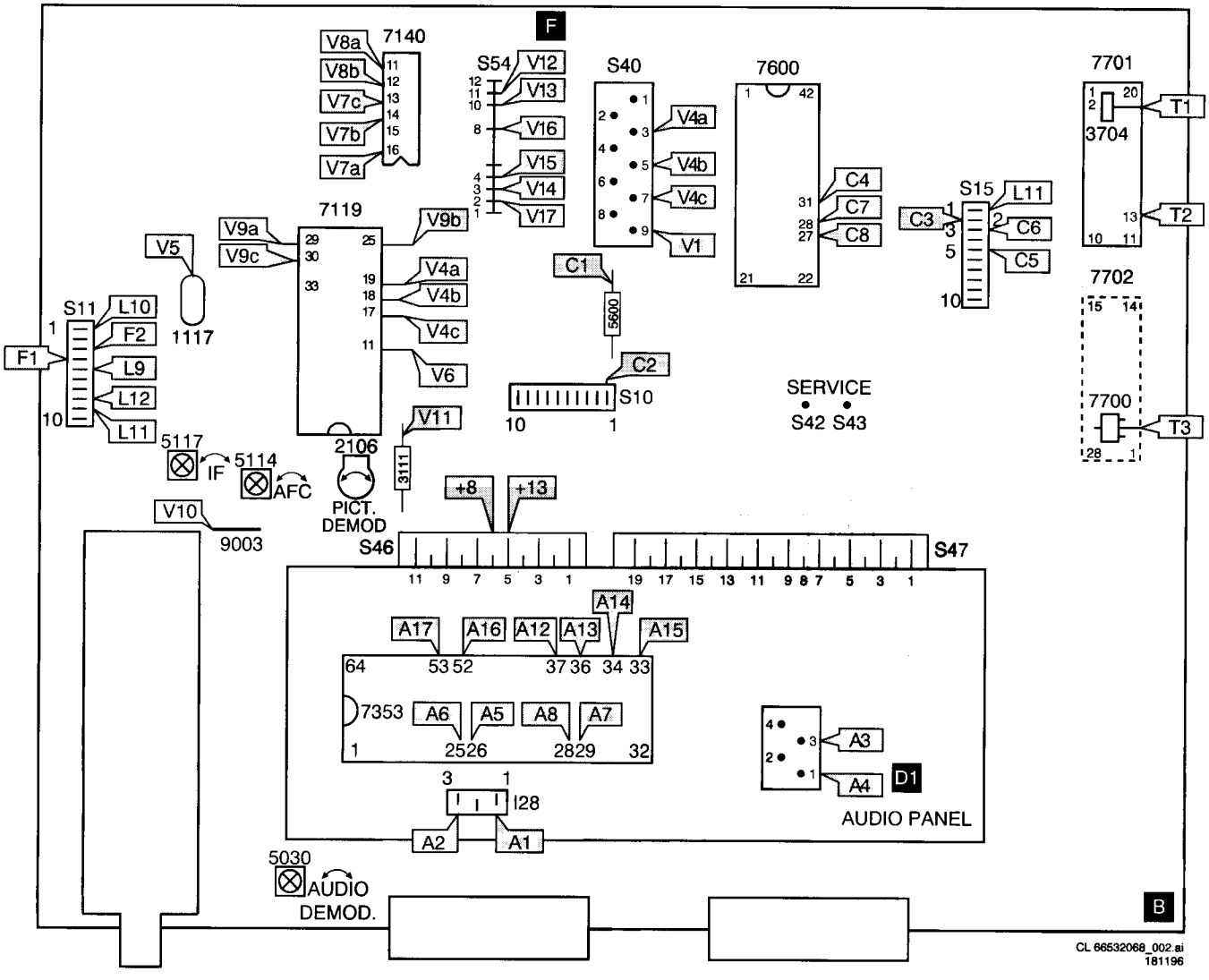
Small signal panel / Klein-Signal Platine / Platine petits signaux



(1) Software version
(2) Error buffer
(3) Options
(4) Alignments and geometry

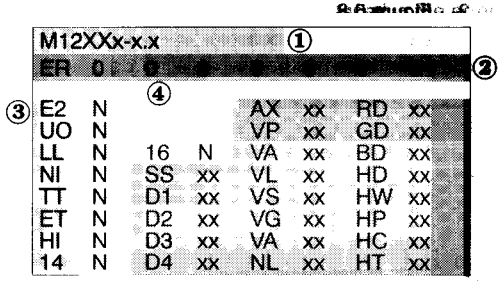

M12XXx-x.x
①
ER 0
②
④
③
E2 N AX xx RD xx
UO N VP xx GD xx
LL N 16 N VA xx BD xx
NI N SS xx VL xx HD xx
TT N D1 xx VS xx HW xx
ET N D2 xx VG xx HP xx
HI N D3 xx VA xx HC xx
14 N D4 xx NL xx HT xx

Figure 6.1 Screen of the Service Alignment Mode (SAM)

6.3 Error codes and "blinking LED" procedure

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right.

- The last error detected (actual) is the error at the left side
- The error buffer will be reset in the following cases:
  1. exiting the SAM with the "standby" command on the remote control
  2. transmitting the commands "DIAGNOSE 9 9 OK" with the DST
- By leaving the SAM with the mains switch, the error buffer is not reset.

Examples:

ERROR:	0 0 0 0 0 0:	No error code detected
ERROR:	3 0 0 0 0 0:	Error code 3 is the last and only detected error
ERROR:	5 3 0 0 0 0:	Error code 3 first and error code 5 last detected

The contents of the error buffer can also be made visible through the "blinking LED" procedure. This is especially useful when there is no picture. There are two methods:

1. When the SDM is entered, the LED will blink the number of times, equal to the value of the *last* error code. The LED will stay off briefly and blink again the number of times, equal to the value to the *last* error code
2. With the DST *all* error codes in the error buffer can be made visible. While in SDM, transmit the command: "DIAGNOSE *x* OK" where *x* is the position in the error buffer to be made visible *x* ranges from 1, (the last (actual) error) to 7 (the first error)

   The LED will operate in the same way as in point 1, but now for the error code on position *x*.

Example:

Error code position	*1 2 3 4 5 6 7*
Error buffer	**2 4 1 0 0 0 0**

- *after entering SDM*

blink (2x) - *pause* - blink (2x)

- *after transmitting* "DIAGNOSE 2 OK" *with the DST*

blink (4x) - *pause* - blink (4x)

- *after transmitting* "DIAGNOSE 3 OK" *with the DST*

blink - *pause* - blink

- *after transmitting* "DIAGNOSE 4 OK" *with the DST*

nothing happens

Note! *Note that it may take up to 7 seconds before the set respons to a DIAGNOSE command. Interruption of the blinking sequence may lead to incorrect results.*

Important! *Not all software versions of the MD1.2E chassis support the blinking LED procedure and the DIAGNOSE 99 command. Software versions NOT supporting the blinking LED procedure are M12BAx-x.x and M12COx-3.x.*

Error code	Error description	Blinking LED	Possible defective components
0	No error detected	—	—
1	BIMOS (TDA8366) error	1x	IC7119 (SSP)
2	MSP3400/3410 error	2x	IC7353 (SSP)
3	I^2C bus error	3x	All I^2C-related components
4	Wrong EEPROM	4x	IC7685 (SSP)
5	EEPROM defective	5x	IC7685 (SSP)
6	Tuner error	6x	U1000 (SSP)
7	TXT error	7x	IC7702 (SSP)
8	Histogram Proc. error	8x	IC7210 (reserved)
9	16:9 processor error	9x	IC7440 (16x9 module)
10	WSSB module error	10x	IC7540 (WSSB module)
11	Dolby processor error	11x	IC7600 (Audio module)

Table 6.1 Error code list

6.4 Protections

6.4.1 In the MD 1.2E the following protections are possible:

Protections generated by the power supply:
- Overload protection → Hick up mode
- Underload → Hick up mode
- Over voltage → Hick up mode
- Under voltage → Hick up mode

Deflection:
- Horizontal Protection → Supply to standby
- EW-Protection → Supply to standby
- Vertical Protection → BIMOS standby mode

Software protection
- BIMOS IC7119 defective → (Error code 1)
  Set can be switched between standby and ON, but there is no picture, no OSD, sound is only noise.
- SDA or SCL shorted → (Error code 3)
  Set is switched to standby via standby line, set tries to restart.
- No +5Db or +8Sc at μC → Set is switched to standby via standby line, set tries to restart.

6.4.2 Power supply protections

The power supply will go to a very good audible hick-up mode in the following situations:
- Overload protection
- Under load
- Over voltage
- Under voltage

In hick-up mode
Pin 1 of IC7520 starts up from the start circuit for approximately 2 seconds, immediately after that the protection is activated. This cycle is constantly repeated in hick-up mode. When the set is in hick-up mode a short squeak is audible every 2 seconds.

6.4.3 Horizontal-protection

When the beam current becomes too high for a long period the voltage across C2450 will drop. D6450 will start conducting and as soon as the voltage drop across R3456 is 0V7, TS7450 will conduct, making PROT high.
Via the hold-circuitry of the power supply, the set will stay in the protection mode (standby) and can only be reset by switching the set off and on via the mains switch. If the fault is still present, the set will switch to standby (protection mode) again.

6.4.4 EW-protection (not for 21" sets)

The East/West protection switches the power supply to standby via the signal line STANDBY-SUPPLY PROTECTION. Via the hold-circuitry of the power supply, the set will stay in the protection mode (standby) and can only be reset by switching the set off and on via the mains switch. If the fault is still present, the set will switch to standby (protection mode) again.

The East/West protection detects when the current through the East/West power output stage with TS7480 is too high.

Note: *A current through the East/West stage that is too high can be caused by a defective part in the line-deflection circuitry!*

The current through the East/West stage is measured on the LSP via 2 precision resistors (R3483 and R3484).
In case of a line problem, the east/west-current becomes too high and the voltage across resistors R3483 and R3484 rises. When the voltage level exceeds 0.6V, D6480 starts to conduct and STANDBY-SUPPLY PROTECTION becomes HIGH. When the voltage across C2480 is very high
(e.g. when a line problem is already present when the set is switched on with the mains switch), D6481 and D6482 conduct and EW-PROTECTION is activated very fast.

The East/West protection becomes active in the following cases:
1. Bad contacts of horizontal deflection circuit:
   - bad contacts of horizontal deflection coil
   - bad contacts of linearity corrector coil L5421
   - bad contacts of S-correction capacitor C2427
2. Bad contacts of flyback capacitor C2425.
3. Shorted flyback diode D6421 or D6423.
4. Shorted S-correction capacitor C2427.
5. Bad solder contacts in the line output stage.

When EW-protection has been active, the line output transistor 7420 may also be defective.

6.4.5 Vertical-protection

The vertical output stage creates VERTICAL-PROTECTION pulses at every flyback pulse when it is functioning correctly. These pulses are sensed by the BIMOS IC7119-4D on pin 37. When the pulse train is interrupted, the BIMOS will switch to BIMOS STANDBY mode. In the BIMOS STANDBY mode, the BIMOS switches off the VDRIVE+ and VDRIVE- while the RGB outputs are blanked. Circuit breaker 1463 may be open. Probably, the line output stage will not work and the power supply will switch to hick-up mode (under voltage protection).

6.4.6 Software protection

The software protection is managed by the microprocessor. It continuously verifies the presence of the +5 and +8 supply voltages on pin 34 and the activity of the I²C bus. When the protection becomes active, the software will switch the power supply on and off continuously via the STANDBY line. In this situation the power supply produces a squeaking sound.

- I^2C protection
  The I^2C bus is controlled at each I^2C-command. Therefore every I^2C command has a defined start/stop condition. When the defined start/stop condition is repeatedly incorrect, error 3 is placed in the error buffer and the set switches to software protection.
  I^2C-protection is generated in the following situations:
  - SDA shorted to earth
  - SCL shorted to earth
  - SDA and SCL shorted

  When SCL or SDA is shorted, the set tries to restart and the LED lights in a clearly recognisable pattern.
  - SDA/SCL shorted when the set is switched ON with the mains switch:
    LED is 8 seconds RED, 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, etcetera.
  - SDA/SCL shorted during operation
    LED is 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, etcetera.

- +5Db and +8Sc protection of the microprocessor
  +5Db and +8Sc are the main supply voltages of the entire small signal processing of the set. At pin 34 the microprocessor senses whether the supply voltages +5SDb or +8Sc coming from the power supply are present. When one or both the supply voltages are missing, the set switches to software protection.

6.5 Fault finding and repair tips

Note that for 21" sets, voltages and wave forms may differ.

6.5.1 General

LED indication after start-up procedure is completed
- No LED
  Set is switched OFF, supply problem or microprocessor problem.
- LED continuously
  Set is in standby, control part defective, standby mode defective.
- LED blinking
  Set in SDM, transmitting error buffer.

Audible checks
- Demagnetisation audible: mains voltage is present at LSP.
- EHT audible: supply is operational (line output stage only works in case VOS (+140V for 25 & 29"; +95V for 21") is present.
- Hick-up sound power supply audible: power supply is shorted. Check the LOT (item 5430) and the line output transistor TS7420.

6.5.2 Fault finding in the power supply

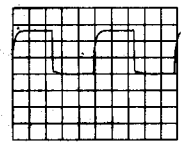
In case of a power supply problem, the power supply can be simplified to a stand alone power supply at low voltages (low risk) as follows:

Control part of the power supply
1. Disconnect the SSP (as a result the line will not function any more and therefore will no longer be a load of the power supply) or disconnect the line by removing jumper 9400 and R3400 (if present) on the LSP.
2. Connect an external DC power supply between supply pin 1 IC7520 (via a diode - e.g. BYD33D - with cathode to supply pin 1 IC7520) and hot earth (e.g. earth of the big smoothing capacitor C2505).
3. Connect a oscilloscope to test point P4 at pin 3 IC7520.
4. Turn up the external DC supply voltage slowly to 17V DC.

Remark: *The IC starts at a supply voltage of 14V DC, after that the supply voltage can drop to approx. 9V DC. At approximately 18V DC, over voltage protection becomes active, resulting in a supply voltage drop below 7V DC before a new start-up is performed by turning up the supply voltage above 14V DC.*

5. The correct (measured) situation is displayed in . Other results indicate a defect in the power supply control part (IC7520 or peripheral components at pins 10 or 11).

Figure 6.2:
5V/div; 5uS/div
→ 40KHz pulse



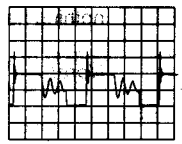
Energy transfer of the power supply (only if control part is OK)
6. Apply action 1, 2 and 4 as described earlier.
7. Connect a lamp of 230V/100W across the VOS output capacitor C2569.
8. Connect a 1kΩ resistor between the +5STANDBY (connector 7L10) and the STANDBY line (connector 8L10) to switch the power supply to normal operation.
9. Connect the mains connector to a VARIAC but leave it at 0.
10. Connect a voltmeter across C2569 and an oscilloscope between the drain of TS7541 (25 & 29") or TS7540 (21") and hot earth.
11. Slowly increase the mains input voltage by the VARIAC (in this way further damage to the power supply can be avoided).

Protections, Faultfinding and Repair tips

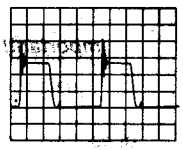
The wave forms for the following mains voltage are given:

Mains in voltage
10V AC: 20kHz and VOS 7V5
20V AC: 40kHz and VOS 30V
40V AC: 40kHz and VOS 80V
65V AC: 40kHz and VOS 140V
> 65V AC: Stable situation, so 40kHz and 140V
In case of a feedback problem, the situation will not stabilise or the voltage will exceed 140V (95V with 21")

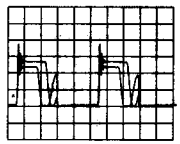
1. Figure 6.3:
   Mains in 10V AC
   10V/div; 10us/div



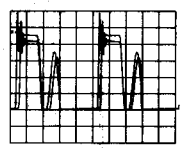
2. Figure 6.4:
   Mains in 20V AC
   20V/div; 5uS/div
   → 40kHz pulse
   → VOS 30V



3. Figure 6.5:
   Mains in 40V AC
   50V/div; 5uS/div
   → 40kHz pulse
   → VOS 80V



4. Figure 6.6:
   Mains in 65V AC
   50V/div; 5uS/div
   → 40kHz pulse
   → VOS 140V



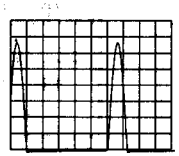
6.5.3 Fault finding of the horizontal circuitry

When the horizontal circuitry itself is defective, it can be simplified to a stand alone "switched mode supply" at low voltages (low risk) as follows:

1. Disconnect the set from mains.
2. Disconnect the SSP by removing all cables to the SSP.
3. Connect an external 50V DC (or 40V DC) supply with current measurement possibility across C2400.
4. Replace the HDRIVE by an external LF generator (TTL level (between 0 and 5V); duty cycle 50%) with a 16 kHz pulse at the base of TS7410 (near LOT at the side of the PCB).
5. Connect a oscilloscope to test point L1 (collector of line output transistor 7420).

Possibilities:

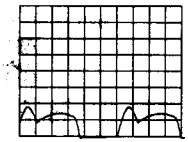
1. Figure 6.7:
   L3; test point at collector line output transistor (7420)
   50V/div; 10µS/div
   Current from external DC supply approx. 100mA



Observation: *normal 16kHz pulses and 100mA supply current*

Correct horizontal circuitry
Note that the amplitude of the signal strongly depends on the frequency of the generator.

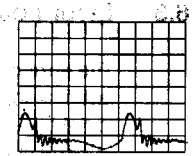
2. Figure 6.8:
   L3; test point at collector line output transistor (7420)
   50V/div; 10µS/div



   Line deflection open:
   Current from external DC supply is approximately 100mA.

Observation: *small pulse followed by wide pulse and 100mA supply current*
Causes: *horizontal deflection coil open*
linearity coil L5421 open
S-correction C2427 open

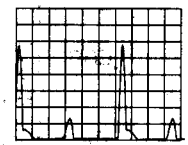
3. Figure 6.9:
   L3; test point at collector line output transistor (7420)
   50V/div; 10µS/div
   Current from external DC supply approx 500mA !!



Observation: *fast oscillations and 500mA supply current*
Cause: *horizontal deflection shorted (e.g. line deflection coil shorted)*

When the line deflection is not completely shorted but only a number of windings are shorted, the wave form does not show the oscillation and the current of the external DC supply is approximately 200mA.

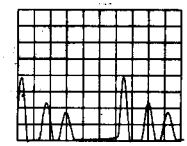
4. Figure 6.10:
   L3; test point at collector line output transistor (7420)
   100V/div; 10µS/div



   Current from external DC supply is approximately 150mA

Observation: *flyback time is shorter, one extra pulse in between, 150mA supply current*
Cause: *flyback capacitor C2425 open*

5. Figure 6.11:
   L3; test point at collector line output transistor (7420)
   100V/div; 10µS/div



   Current from external DC supply > 1A

Observation: *2 pulses per cycle extra and supply current from more than 1A*
Cause: *short-circuit in picture tube (e.g. EHT to Aquadag)*

6.5.4 Fault finding "no picture, no protection" (problem in the video controller IC part TDA8366-4C)

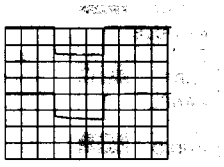
When there is no picture and no protection, it is most likely that there is a problem with the BC_INFO caused by the TDA8366, the RGB amplifiers or the picture tube.

For measuring, connect a video generator (e.g. PM5518) at the aerial input with a white pattern to the tuner. Trigger the oscilloscope field frequent. A stable picture is obtained if triggered with VDRIVE+ at pin 4 S11.

Normal start up procedure

1. First phase of start up; 4 white measuring lines (lines 15, 16, 17, 18) and the main picture is muted (wave forms are better visible if the picture tube is cold);

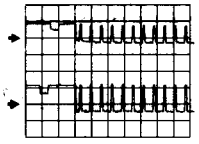
   Figure 6.12:
   Red (pin 8 of connector R43 on the CRT panel) and green gun (pin 6)
   100V/div DC;
   100µs/div

   The total beam current is measured and fed back to pin 16 TDA8366 (IC7119)
   The TDA8366 checks the voltage at pin 16 of the TDA8366 during these lines
   < 4.5V : set remains in this phase
   ≥ 4.5V : set continues with start up phase 2

2. Second phase of start up; each beam is separately measured and the main picture is still muted. Line 15 is Red, line 16 is Green and line 17 is Blue. BC_INFO is measured.
   - differences between the lines (guns) are compensated
   - when the differences are minimal the set continues with phase 3, otherwise it remains in **phase 2**

   Figure 6.13:
   Red (lower line) (pin 8 of connector R43 on the CRT panel) and green (upper line) gun (pin 6)
   50V/div AC;
   100µs/div

3. After start up the picture is present and differences in cut-off points of the R, the G and the B gun are compensated continuously.

Repair procedure

Typical situation: no picture and no error codes
- Switch the set on.
- In a 4:3 set, press "picture size" to switch the set to "16:9 compressed" mode.
- In a 16:9 set, shift down the picture with the cursor keys.

The start up phase of the set can be identified:

1. **A bright white horizontal line at the top; the rest of the picture is dark**
   (set hangs in first phase of start up procedure)
   Oscilloscope picture of the voltage over the guns looks like figure 6.12.

   TDA8366 (IC7119), picture tube and RGB amplifiers are OK

   There should be 4.5V at pin 16 TDA8366.

   Possible problem: if there is no 4.5V present at pin 16 of TDA8366, there is a defect (in one or more of the components) in the BC_INFO feedback loop.

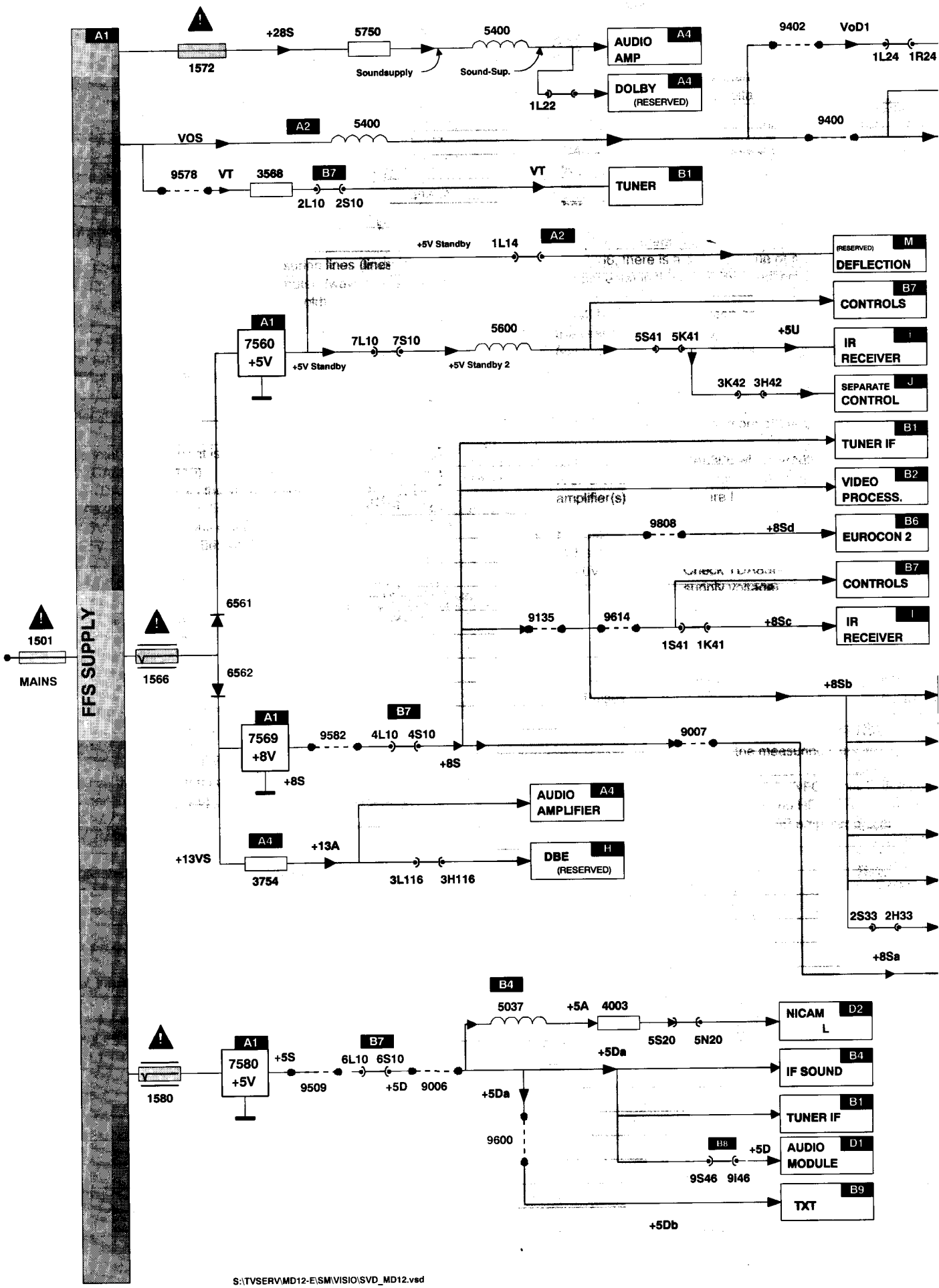
2. **Small horizontal red, green and blue lines at the top; the rest of the picture is dark**
   (set hangs in second phase of start up procedure)

   TDA8366 is OK

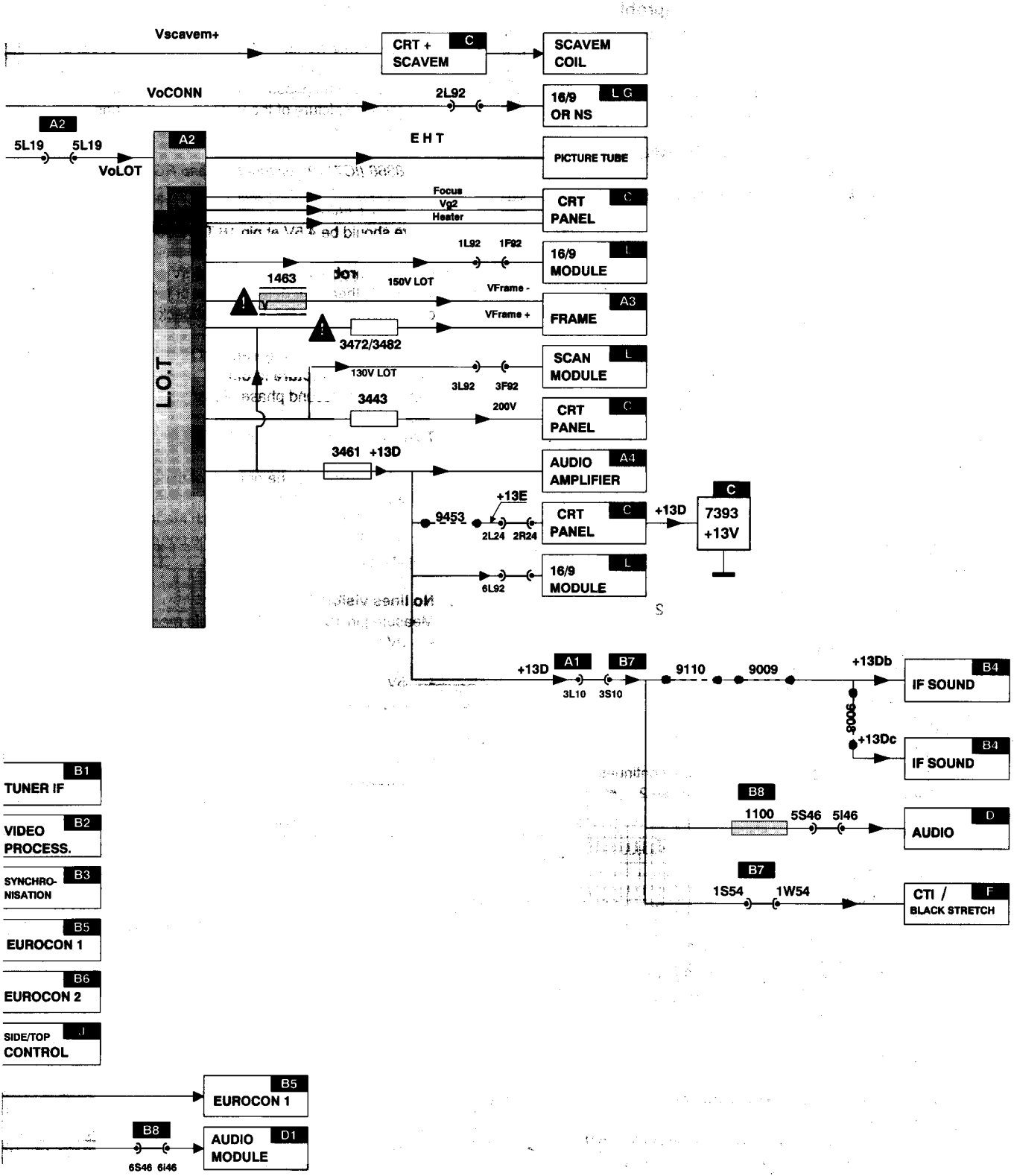
   Possible problem: one or more of the guns of the picture tube are bad
   Measure at pin 16 TDA8366 which feedback line(s) (the R or G or B line) is/are smaller; the corresponding amplifier(s) or gun(s) is/are faulty.

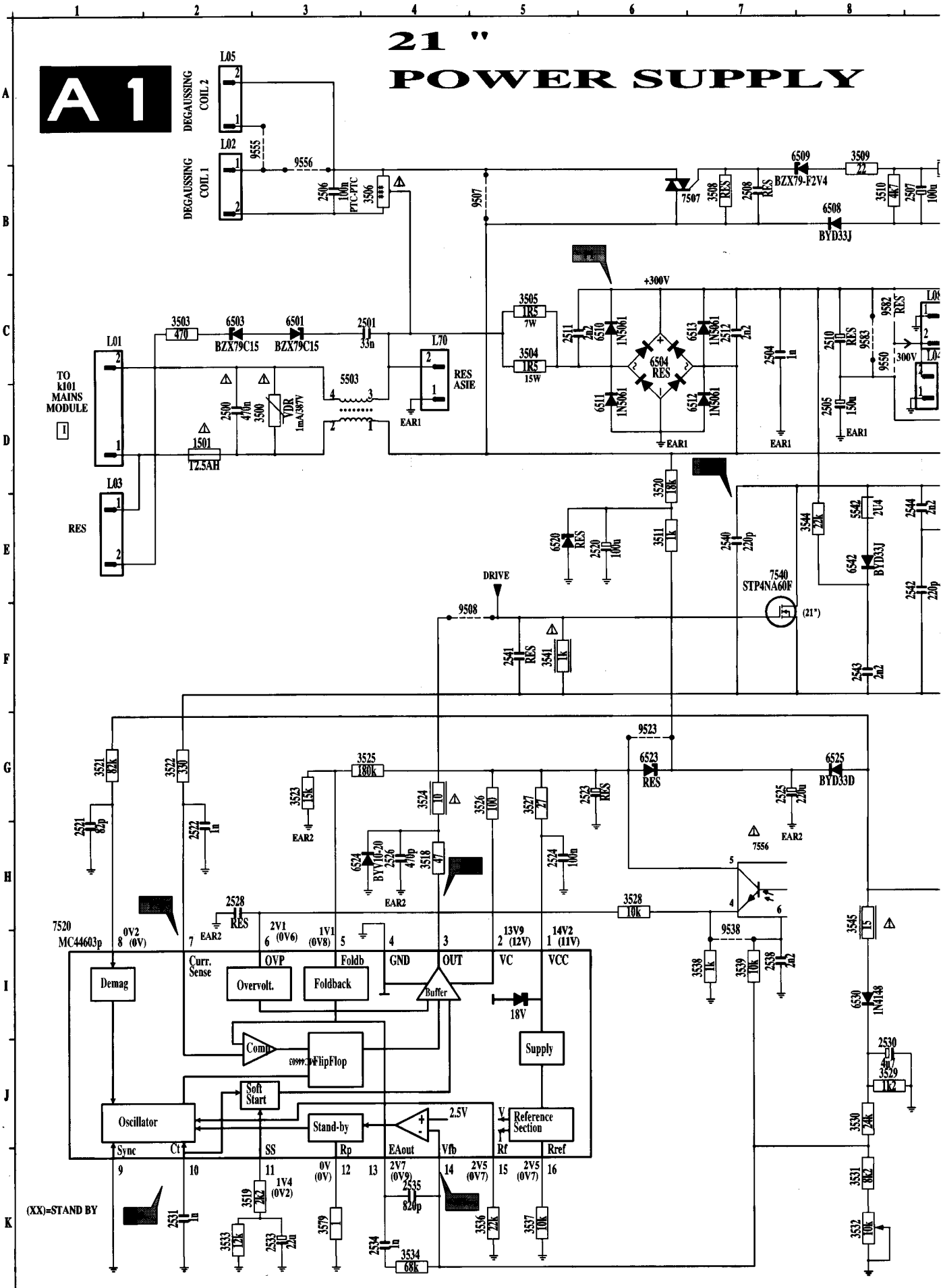
3. **No lines visible (picture dark)**
   Measure pin 16 TDA8366; possible measurements:
   - 0V : Check TDA8366 (sandcastle and the supply voltage)
   - 5V : Check RGB amplifiers
     Short pin 16 TDA8366 to ground, now there will be measuring lines (at continuously 5V, phase 1 and 2 is bypassed)
   - Pulses : there is a measuring line, so the TDA8366 is OK
     Measure on cathode on the CRT panel if the measuring lines are present:
     Yes → BC_INFO circuit is open or no HEATER voltage
     No → RGB amplifier problem

7. Supply voltage diagram /

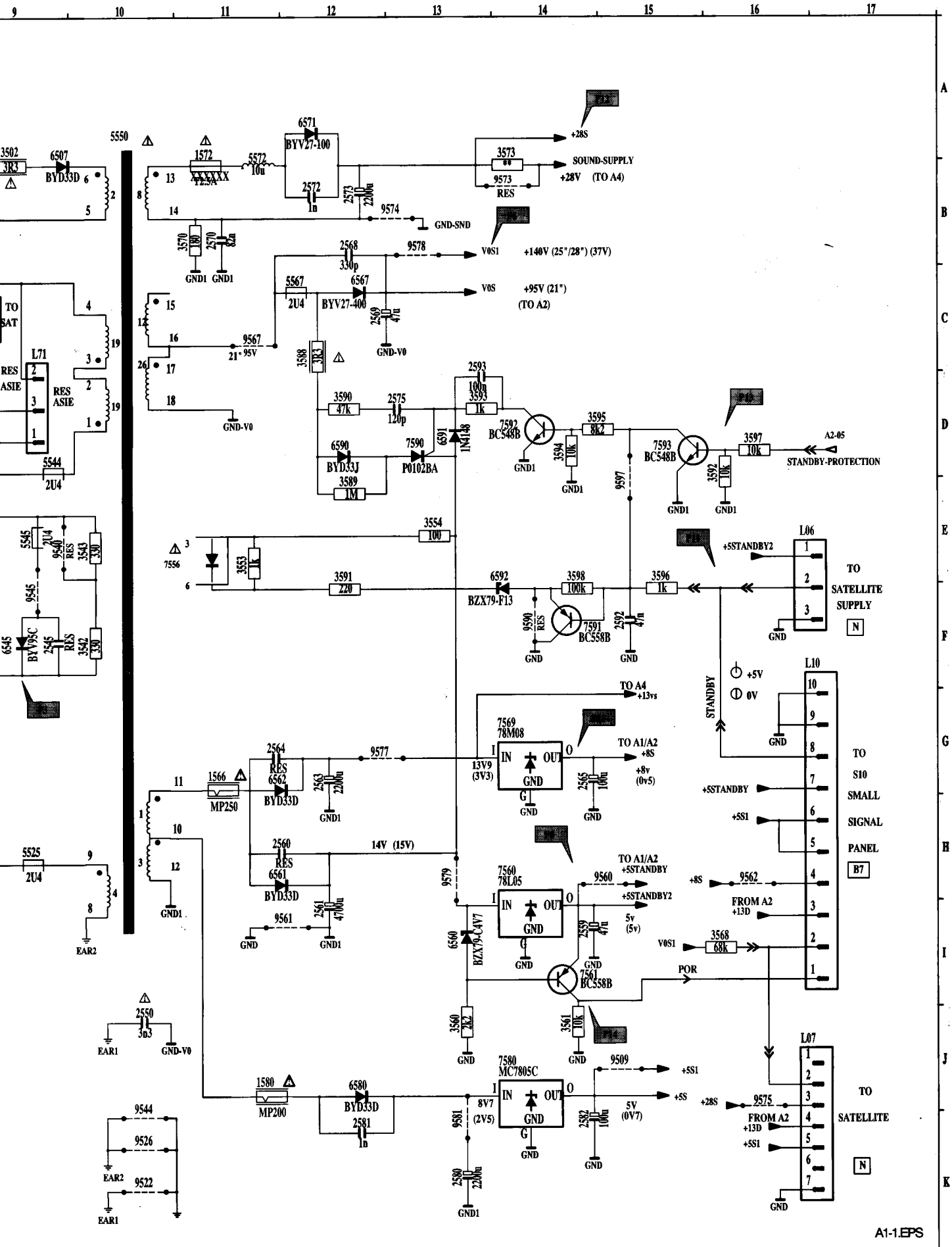


Speisespannung Schaltplan / Diagramme de tension d'alimentation




A 1
21 "
POWER SUPPLY
DEGAUSSING COIL 2
DEGAUSSING COIL 1
L05
L02
9555
9556
2506
100n
PTC-PTC
3506
9507
7507
3508
RES
2508
RES
6509
BZX79-F2V4
3509
22
3510
4k7
2507
100u
6508
BYD33J
+300V
3505
1R5
7W
3504
1R5
15W
2511
2n2
6510
1N5061
6513
1N5061
2512
2n2
6504
RES
6511
1N5061
6512
1N5061
2504
1n
EAR1
2510
10
RES
9583
9582
RES
9550
300V
2505
150n
L08
L04
3503
470
6503
BZX79C15
6501
BZX79C15
2501
33n
L01
TO
k101
MAINS
MODULE
1
2500
470n
3500
VDR
1mA/387V
5503
1501
T2.5AH
L70
RES
ASIE
EAR1
L03
RES
3520
18k
3511
1k
6520
RES
2520
10
100u
2540
220p
3544
22k
5542
2U4
6542
BYD33J
2544
2n2
2542
220p
DRIVE
9508
7540
STP4NA60F
(21")
2541
RES
3541
1k
2543
2n2
9523
6523
RES
6525
BYD33D
3521
82k
3522
330
3525
180k
3523
15k
EAR2
3524
10
3526
100
3527
27
2523
RES
2525
220n
EAR2
7556
2521
82p
2522
1n
6524
BYV10-20
2526
470p
3518
47
EAR2
2524
10mn
2528
RES
EAR2
3528
10k
9538
3538
1k
3539
10k
2538
2n2
3545
15
6530
1N4148
2530
4n7
3529
1k2
3530
24k
3531
8k2
3532
10k
7520
MC44603p
0V2
8 (0V)
7
2V1
6 (0V6)
1V1
(0V8)
5
4
3
13V9
2 (12V)
14V2
1 (11V)
Curr.
Sense
OVP
Foldb
GND
OUT
VC
VCC
Demag
Overvolt.
Foldback
Buffer
18V
Comp
FlipFlop
Supply
Soft
Start
Oscillator
Stand-by
2.5V
Reference
Section
Sync
Ct
SS
Rp
EAout
Vfb
Rf
Rref
9
10
11
12
13
14
15
16
0V
(0V)
1V4
(0V2)
2V7
(0V9)
2V5
(0V7)
2V5
(0V7)
3519
2k2
2535
820p
2531
1n
3533
12k
2533
22n
3579
2534
1n
3534
68k
3536
22k
3537
10k
(XX)=STAND BY

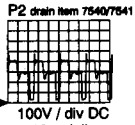
Alimentation 21"



1501 D2
1506 G11
1507 A11
1510 J11
1520 D4
1521 C4
1524 C7
1525 D8
1526 B3
1527 B9
1528 B7
1530 C8
1531 C5
1532 C7
1534 E6
1537 H1
1538 H2
1539 G2
1540 H5
1545 G7
1546 H4
1548 H2
1550 F8
1551 K2
1553 K3
1554 K4
1555 K4
1558 E7
1560 E7
1561 E5
1562 F9
1563 F8
1564 E9
1565 F6
1570 J10
1559 F4
1560 H12
1561 J12
1563 G12
1564 G11
1565 G14
1568 B12
1569 C12
1570 B11
1572 B12
1573 B12
1575 D13
1580 K13
1581 K12
1582 K14
1597 F15
1501 C13
1500 D3
1502 A9
1503 C2
1504 C5
1505 C5
1506 B4
1508 B7
1509 A8
1510 B8
1511 B6
1518 H4
1519 K7
1520 D6
1521 G4
1541 G3
1523 G3
1524 G4
1525 G4
1526 G5
1527 G5
1528 H6
1529 J8
1530 J8
1531 K8
1532 K8
1533 K2
1534 K4
1536 K5
1537 K5
1538 L7
1541 F5
1542 E10
1543 E10
1544 E8
1547 H8
1553 E11
1554 E13
1560 J13
1561 J14
1568 J16
1570 B11
1573 A14
1579 K3
1588 C12
1589 E12
1590 D12
1591 E12
1592 D16
1593 D13
1594 D14
1595 D15
1596 E15
1597 D16
1598 E14
1503 C3
1525 H9
1552 E8
1544 D8
1575 E9
1550 A10
1567 C12
1572 B11
6501 C3
6503 C2
6504 C6
6507 A9
6508 B8
6509 A8
6510 C6
6511 D6
6512 D7
6513 C7
6520 E5
6523 C9
6524 H3
6525 G8
6530 J8
6542 E8
6545 F9
6560 J3
6561 H11
6562 G11
6567 C12
6571 A12
6580 D12
6590 D12
6591 D13
6593 E14
6526 B6
7520 H1
7540 H7
7556 E10
7560 H14
7561 J14
7569 G14
7580 J14
7590 D13
7591 E15
7592 D14
7593 D15
9507 B5
9508 F4
9509 J15
9522 K10
9523 G6
9526 K10
9538 L7
9540 E9
9544 J10
9545 F9
9550 C8
9555 A3
9556 B3
9560 H15
9561 J12
9562 H16
9567 C11
9573 B14
9574 B13
9575 H16
9577 G12
9578 B13
9579 H13
9581 K13
9584 C8
9585 C8
9590 E14
9597 E15
L01 C1
L02 B7
L03 D7
L04 D9
L05 A2
L06 E16
L07 J16
L08 C9
L10 E16
L20 C4
L71 C9

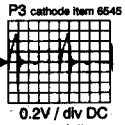
P1 pin 4 item 5550
300VDC

P2 drain item 7540/7541



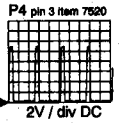
100V / div DC
10µs / div

P3 cathode item 6545



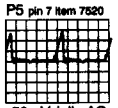
0.2V / div DC
5µs / div

P4 pin 3 item 7520



2V / div DC
10µs / div

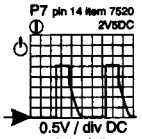
P5 pin 7 item 7520



50mV / div AC
10µs / div

P6 VOS
non 21": 140V DC
21": 95V DC

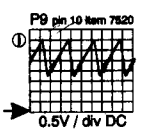
P7 pin 14 item 7520
2VSDC



0.5V / div DC
0.1s / div

P8 +5VSTANDBY
5VDC
0VDC

P9 pin 10 item 7520



0.5V / div DC
10µS / div

P10 +8S
8VDC
0VDC

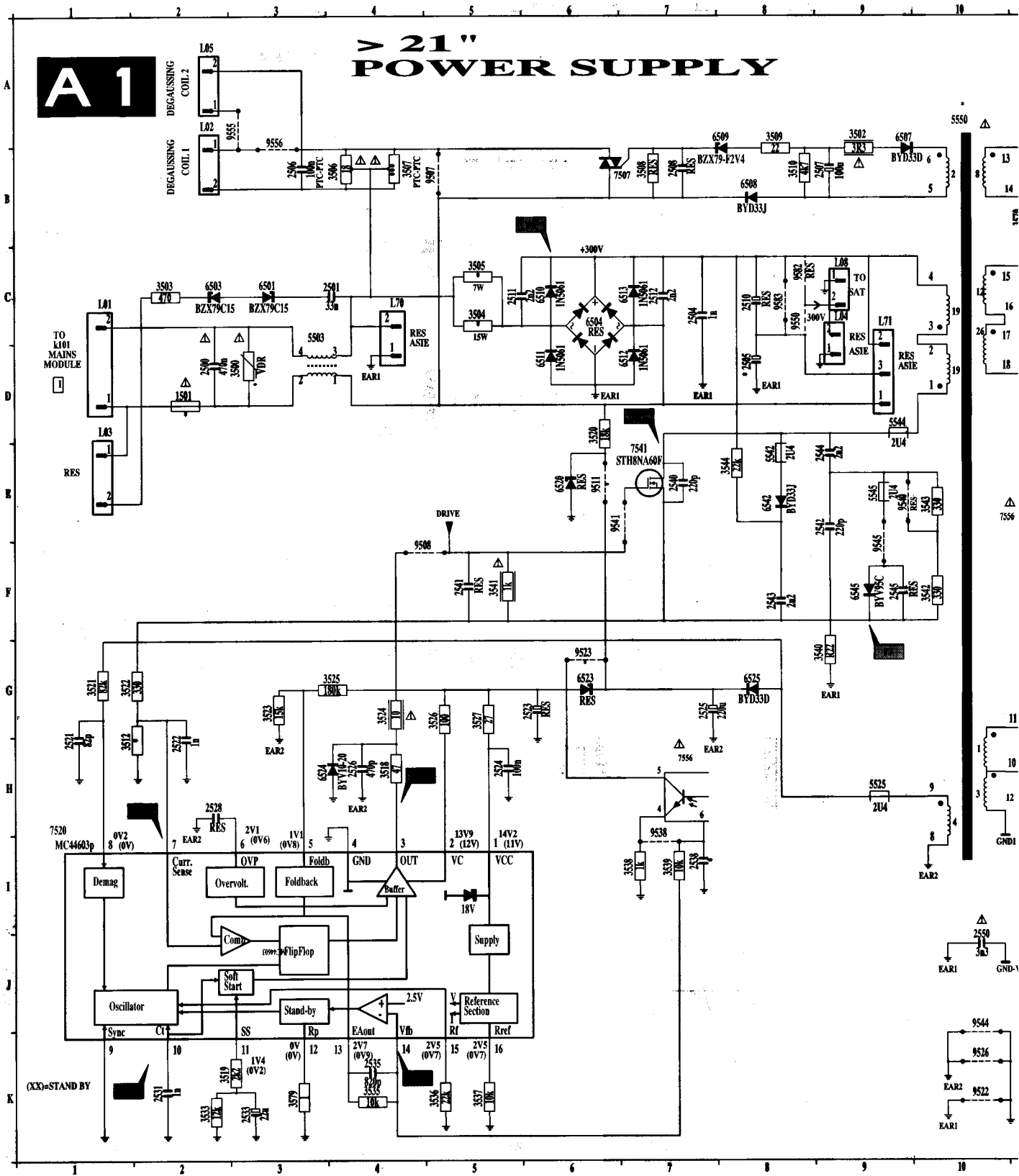
P11 STANDBY
5VDC
0VDC

P12 +28S/
SOUND-SUPPLY
+28VDC

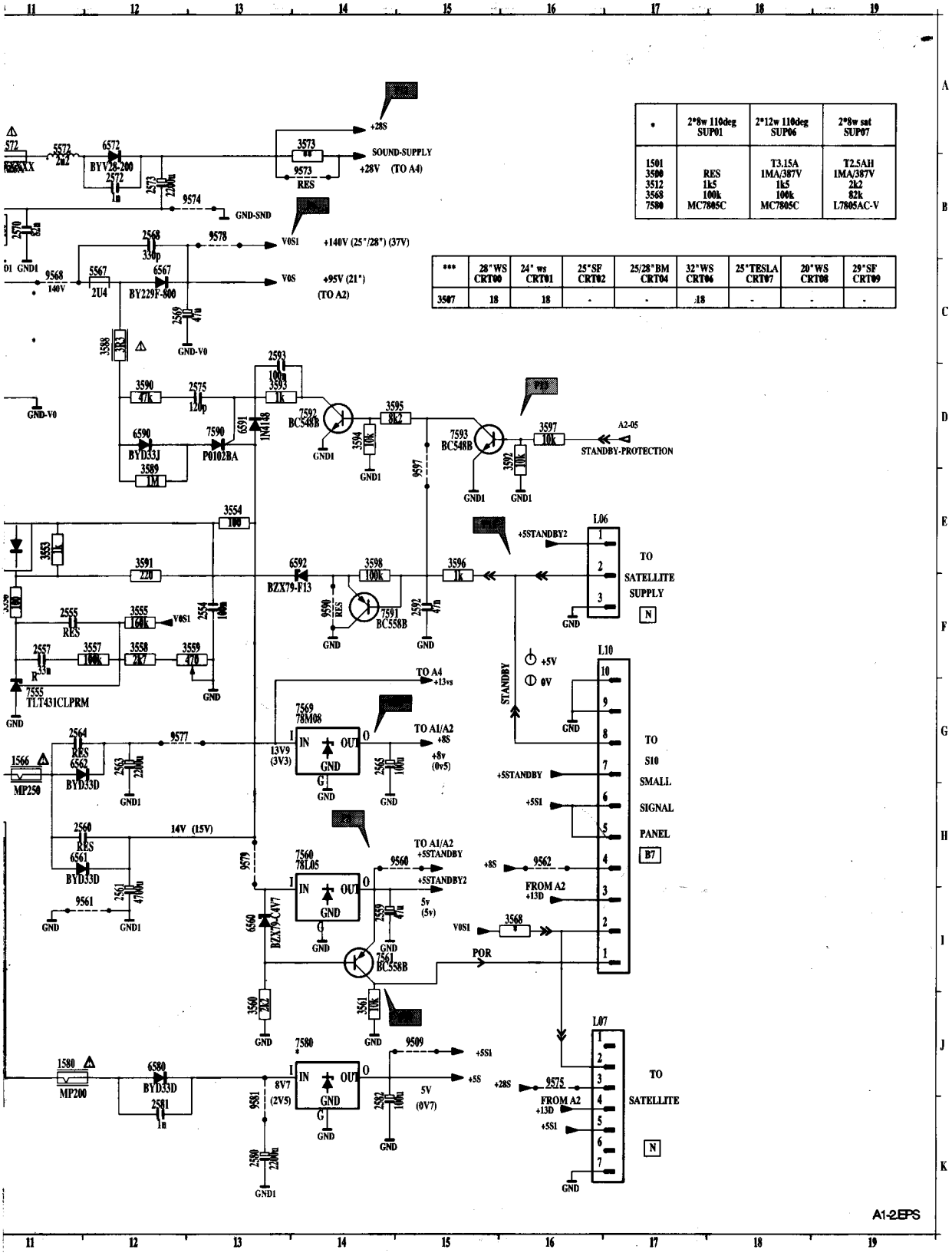
P13
/PROTECTION
0VDC = not in protection

P14
POR (to)
0V 5V
POR (to)
5V 0V

OSC A1.CDR


A 1
> 21"
POWER SUPPLY
DEGAUSSING COIL 2
DEGAUSSING COIL 1
TO ki01 MAINS MODULE
RES
RES ASTE
EAR1
EAR2
+300V
DRIVE
7541 STH8NA60F
BZX79-F2V4
BZX79C15
BYD33D
BYD33J
BYV95C
BYT16-20
TO SAT
7520 MC44603p
Curr. Sense
OVP
Foldb
GND
OUT
VC
VCC
Demag
Overvolt.
Foldback
Buffer
Comp
FlipFlop
Supply
Soft Start
Oscillator
Stand-by
Reference Section
Sync
SS
Rp
EAout
Vfb
Rf
Rref
18V
2.5V
(XX)=STAND BY
GND1

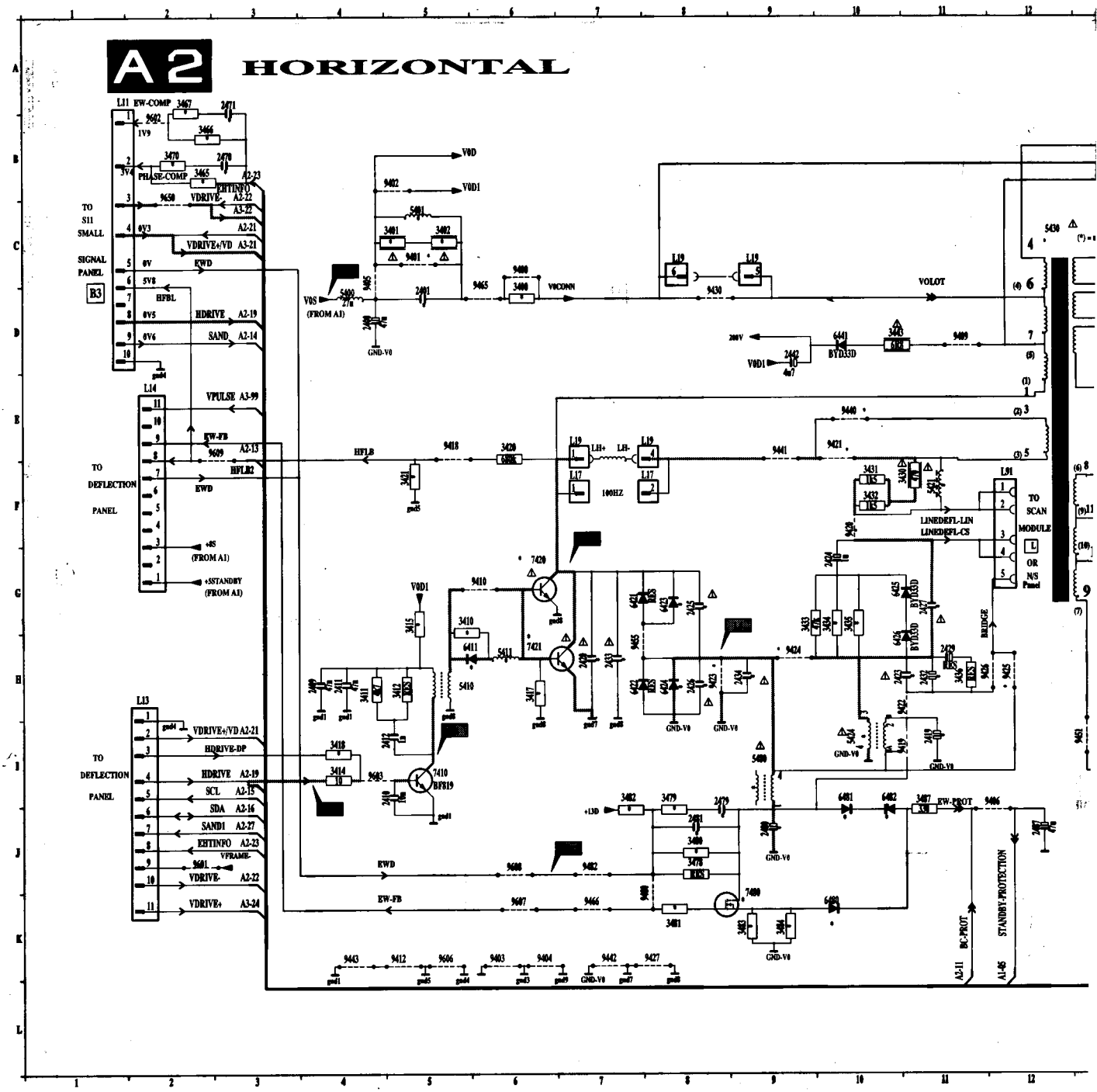
Alimentation > 21"



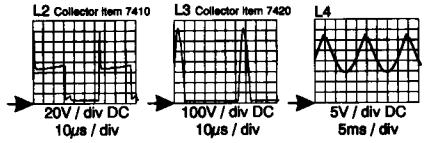
*	2*8w 110deg SUP01	2*12w 110deg SUP06	2*8w sat SUP07
1501		T3.15A	T2.5AH
3500	RES	1MA/387V	1MA/387V
3512	1k5	1k5	2k2
3568	100k	100k	82k
7580	MC7805C	MC7805C	L7805AC-V

***	28"WS CRT00	24" ws CRT01	25"SF CRT02	25/28"BM CRT04	32"WS CRT06	25"TESLA CRT07	20"WS CRT08	29"SF CRT09
3507	18	18	-	-	18	-	-	-

Horizontal output / Horizontalausgang /



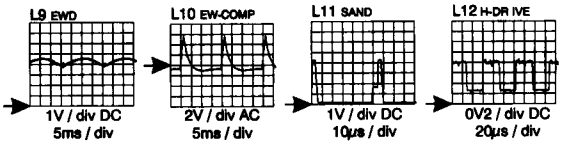
L1 VOS
non 21": 140VDC
21": 95VDC



L5 +13D
14V7DC

L6 VFRAME+
14VDC

L7/L8 VFRAME-
-15VDC

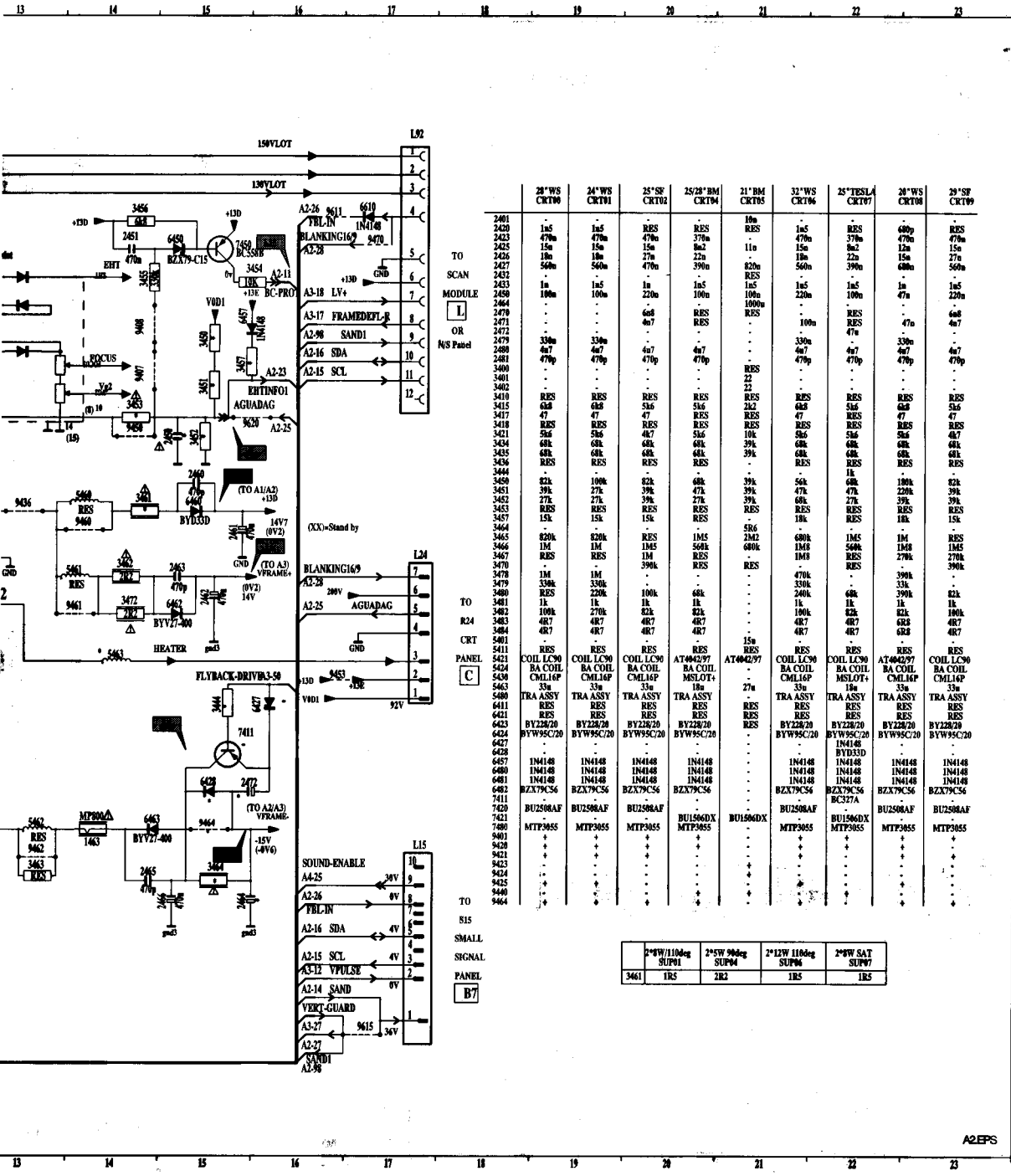


L13 BC-PROT
0V2DC

= 0V

OSC_A2.CDR

Sortie horizontale

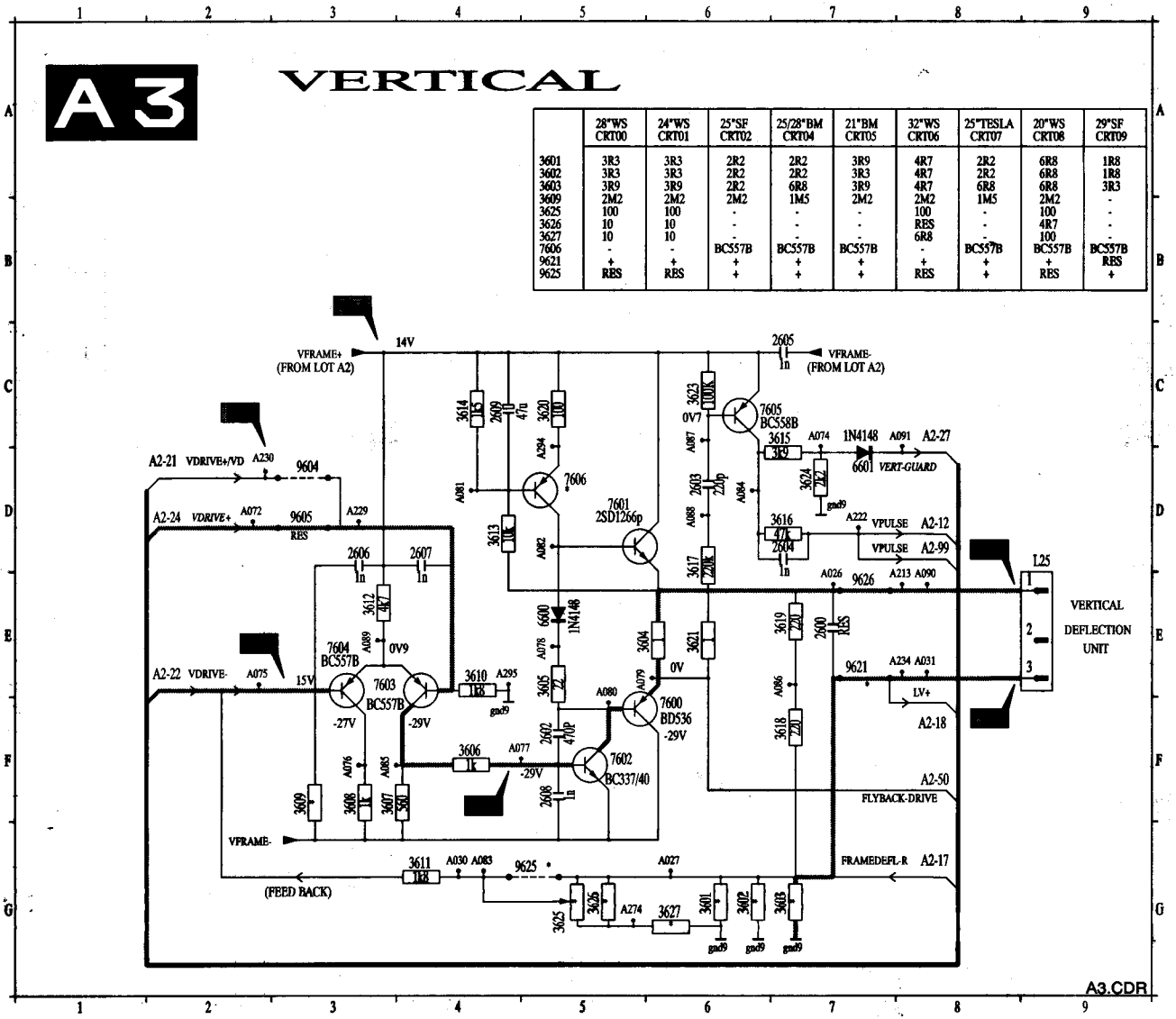


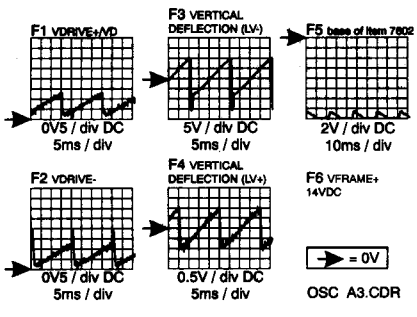
	28"WS CRT90	24"WS CRT91	25"SF CRT02	25/28"BM CRT94	21"BM CRT05	32"WS CRT06	25"TESLA CRT07	20"WS CRT08	29"SF CRT99
2401	-	-	-	-	10n	-	-	-	-
2420	1n5	1n5	RES	RES	RES	1n5	RES	680p	RES
2423	470n	470n	470n	370n	-	470n	370n	470n	470n
2425	15n	15n	15n	8n2	11n	15n	8n2	12n	15n
2426	18n	18n	27n	22n	-	18n	22n	15n	27n
2427	560n	560n	470n	390n	820n	560n	390n	680n	560n
2432	-	-	-	-	RES	-	-	-	-
2433	1n	1n5	1n	1n5	1n5	1n5	1n5	1n	1n5
2450	100n	100n	220n	100n	100n	220n	100n	47n	220n
2464	-	-	-	-	1000u	-	-	-	-
2470	-	-	6n8	-	RES	-	RES	-	6n8
2471	-	-	4n7	RES	-	100n	RES	47n	4n7
2472	-	-	-	-	-	-	47n	-	-
2479	330n	330n	-	-	-	330n	-	330n	-
2480	4n7	4n7	4n7	4n7	-	4n7	4n7	4n7	4n7
2481	470p	470p	470p	470p	-	470p	470p	470p	470p
3400	-	-	-	-	RES	-	-	-	-
3401	-	-	-	-	22	-	-	-	-
3402	-	-	-	-	22	-	-	-	-
3410	RES	RES	RES	RES	RES	RES	RES	RES	RES
3415	6k8	6k8	5k6	5k6	2k2	6k8	5k6	6k8	5k6
3417	47	47	47	RES	RES	47	RES	47	47
3418	RES	RES	RES	RES	RES	RES	RES	RES	RES
3421	5k6	5k6	4k7	5k6	10k	5k6	5k6	5k6	4k7
3434	68k	68k	68k	68k	39k	68k	68k	68k	68k
3435	68k	68k	68k	68k	39k	68k	68k	68k	68k
3436	RES	RES	RES	RES	-	RES	RES	RES	RES
3444	-	-	-	-	-	-	1k	-	-
3450	82k	100k	82k	68k	39k	56k	68k	180k	82k
3451	39k	27k	39k	47k	39k	47k	47k	220k	39k
3452	27k	27k	39k	27k	39k	68k	27k	39k	39k
3453	RES	RES	RES	RES	RES	RES	RES	RES	RES
3457	15k	15k	15k	RES	-	18k	RES	18k	15k
3464	-	-	-	-	5R6	-	-	-	-
3465	820k	820k	RES	1M5	2M2	680k	1M5	1M	RES
3466	1M	1M	1M5	560k	680k	1M8	560k	1M8	1M5
3467	RES	RES	1M	RES	-	1M8	RES	270k	270k
3470	-	-	390k	RES	RES	-	RES	-	390k
3478	1M	1M	-	-	-	470k	-	390k	-
3479	330k	330k	-	-	-	330k	-	33k	-
3480	RES	220k	100k	68k	-	240k	68k	390k	82k
3481	1k	1k	1k	1k	-	1k	1k	1k	1k
3482	100k	270k	82k	82k	-	100k	82k	82k	100k
3483	4R7	4R7	4R7	4R7	-	4R7	4R7	6R8	4R7
3484	4R7	4R7	4R7	4R7	-	4R7	4R7	6R8	4R7
5401	-	-	-	-	15n	-	-	-	-
5411	RES	RES	RES	RES	RES	RES	RES	RES	RES
5421	COIL LC90	COIL LC90	COIL LC90	AT4042/97	AT4042/97	COIL LC90	COIL LC90	AT4042/97	COIL LC90
5424	BA COIL	BA COIL	BA COIL	BA COIL	-	BA COIL	BA COIL	BA COIL	BA COIL
5430	CML16P	CML16P	CML16P	MSLOT+	-	CML16P	MSLOT+	CML16P	CML16P
5463	33n	33n	33n	18n	27n	33n	18n	33n	33n
5480	TRA ASSY	TRA ASSY	TRA ASSY	TRA ASSY	-	TRA ASSY	TRA ASSY	TRA ASSY	TRA ASSY
6411	RES	RES	RES	RES	RES	RES	RES	RES	RES
6421	RES	RES	RES	RES	RES	RES	RES	RES	RES
6423	BY228/20	BY228/20	BY228/20	BY228/20	RES	BY228/20	BY228/20	BY228/20	BY228/20
6424	BYW95C/20	BYW95C/20	BYW95C/20	BYW95C/20	-	BYW95C/20	BYW95C/20	BYW95C/20	BYW95C/20
6427	-	-	-	-	-	-	1N4148	-	-
6428	-	-	-	-	-	-	BYD33D	-	-
6457	1N4148	1N4148	1N4148	1N4148	-	1N4148	1N4148	1N4148	1N4148
6480	1N4148	1N4148	1N4148	1N4148	-	1N4148	1N4148	1N4148	1N4148
6481	1N4148	1N4148	1N4148	1N4148	-	1N4148	1N4148	1N4148	1N4148
6482	BZX79C56	BZX79C56	BZX79C56	-	-	BZX79C56	BZX79C56	BZX79C56	BZX79C56
7411	-	-	-	-	-	-	BC327A	-	-
7420	BU2508AF	BU2508AF	BU2508AF	-	-	BU2508AF	-	BU2508AF	BU2508AF
7421	-	-	-	BU1506DX	BU1506DX	-	BU1506DX	-	-
7480	MTP3055	MTP3055	MTP3055	MTP3055	-	MTP3055	MTP3055	MTP3055	MTP3055
9401	+	+	+	+	-	+	+	+	+
9420	+	+	+	+	-	+	-	+	-
9421	+	+	+	-	-	+	-	+	+
9423	-	-	-	-	+	-	-	-	-
9424	-	-	-	-	+	-	-	-	-
9425	+	+	-	-	+	+	-	+	-
9440	+	+	-	-	+	-	-	-	-
9464	+	+	+	+	-	+	+	+	+

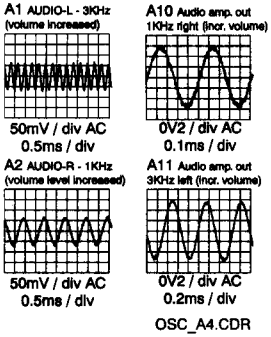
	2*8W/110deg SUP01	2*5W 90deg SUP04	2*12W 110deg SUP06	2*8W SAT SUP07
3461	1R5	2R2	1R5	1R5

Vertical output / Vertikalausgang / Sortie verticale

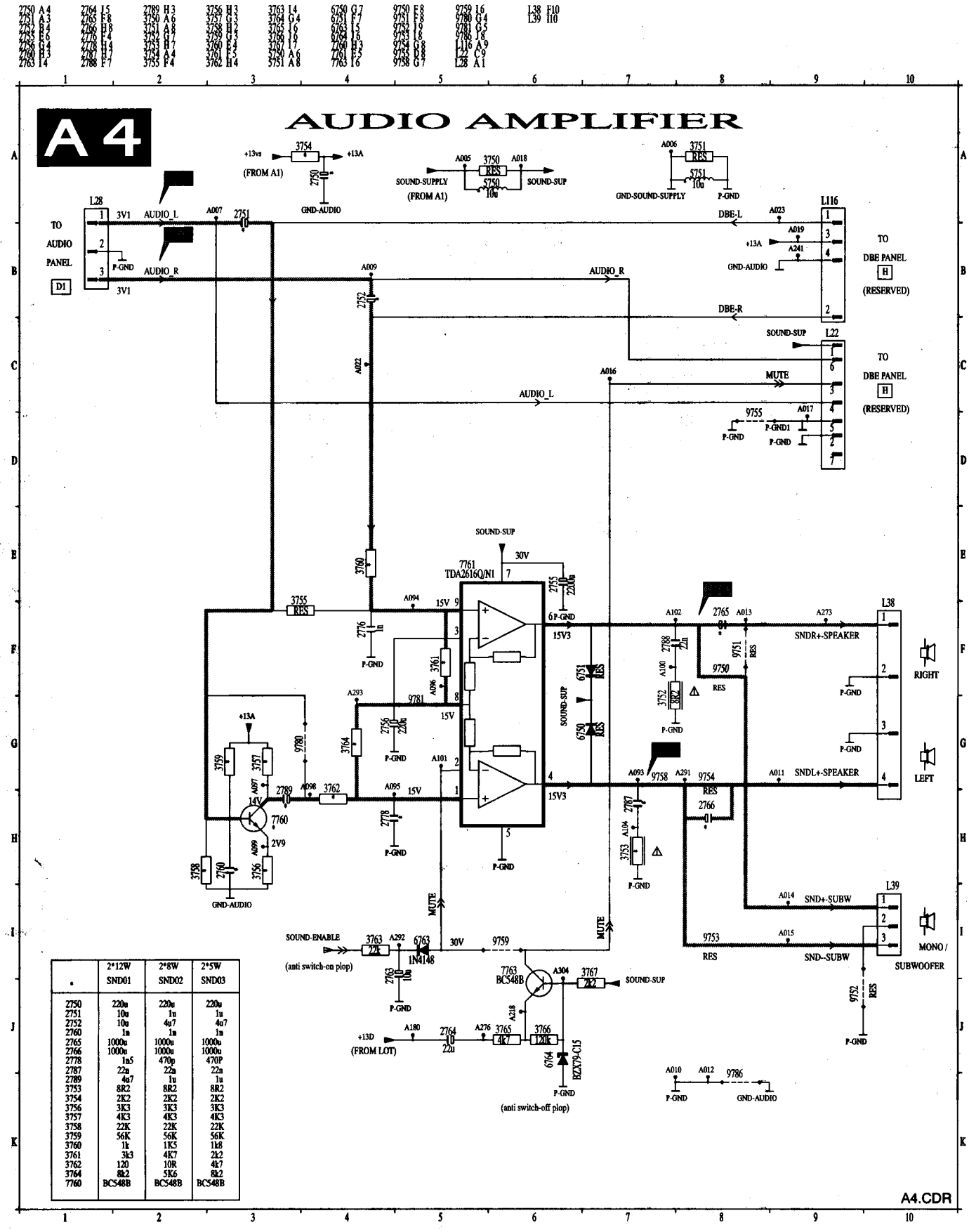
2600 E7	2608 E5	3606 E4	3613 D4	3620 C5	6600 E5	7605 C6	A2-12 D8	A2-50 E8	A274 G5
2601 E5	2609 C4	3607 E3	3614 C4	3621 E6	6601 D7	7606 D5	A2-17 G8	A2-99 D8	A294 D5
2602 D6	3601 G6	3608 E3	3615 C7	3622 C6	7600 E6	9604 B3	A2-18 E8	A213 E8	A295 E4
2603 D7	3602 G6	3609 E3	3616 D7	3623 C5	7601 D5	9605 E2	A2-21 D2	A222 D3	L25 D9
2604 C7	3603 G7	3610 E4	3617 D6	3624 C5	7602 E4	9621 E5	A2-22 E2	A229 D3	
2605 C3	3604 E6	3611 G4	3618 E6	3625 G5	7603 E4	9625 G5	A2-24 D2	A230 D3	
2607 D4	3605 E5	3612 E3	3619 E7	3627 G6	7604 E3	9626 E7	A2-27 C8	A234 E8	


A3
VERTICAL
28"WS CRT00 | 24"WS CRT01 | 25"SF CRT02 | 25/28"BM CRT04 | 21"BM CRT05 | 32"WS CRT06 | 25"TESLA CRT07 | 20"WS CRT08 | 29"SF CRT09
3601 3R3 | 3R3 | 2R2 | 2R2 | 3R9 | 4R7 | 2R2 | 6R8 | 1R8
3602 3R3 | 3R3 | 2R2 | 2R2 | 3R3 | 4R7 | 2R2 | 6R8 | 1R8
3603 3R9 | 3R9 | 2R2 | 6R8 | 3R9 | 4R7 | 6R8 | 6R8 | 3R3
3609 2M2 | 2M2 | 2M2 | 1M5 | 2M2 | 2M2 | 1M5 | 2M2 | -
3625 100 | 100 | - | - | - | 100 | - | 100 | -
3626 10 | 10 | - | - | - | RES | - | 4R7 | -
3627 10 | 10 | - | - | - | 6R8 | - | 100 | -
7606 - | - | BC557B | BC557B | BC557B | - | BC557B | BC557B | BC557B
9621 + | + | + | + | + | + | + | + | RES
9625 RES | RES | + | + | + | RES | + | RES | +
14V
VFRAME+ (FROM LOT A2)
VFRAME- (FROM LOT A2)
A2-21 VDRIVE+/VD
A2-24 VDRIVE+
A2-22 VDRIVE-
7601 2SD1266p
7605 BC558B
7606
7604 BC557B
7603 BC557B
7600 BD536
7602 BC337/40
1N4148
VERT-GUARD
VPULSE A2-12
VPULSE A2-99
VERTICAL DEFLECTION UNIT
LV+ A2-18
A2-50 FLYBACK-DRIVE
FRAMEDEFL-R A2-17
(FEED BACK)
A3.CDR



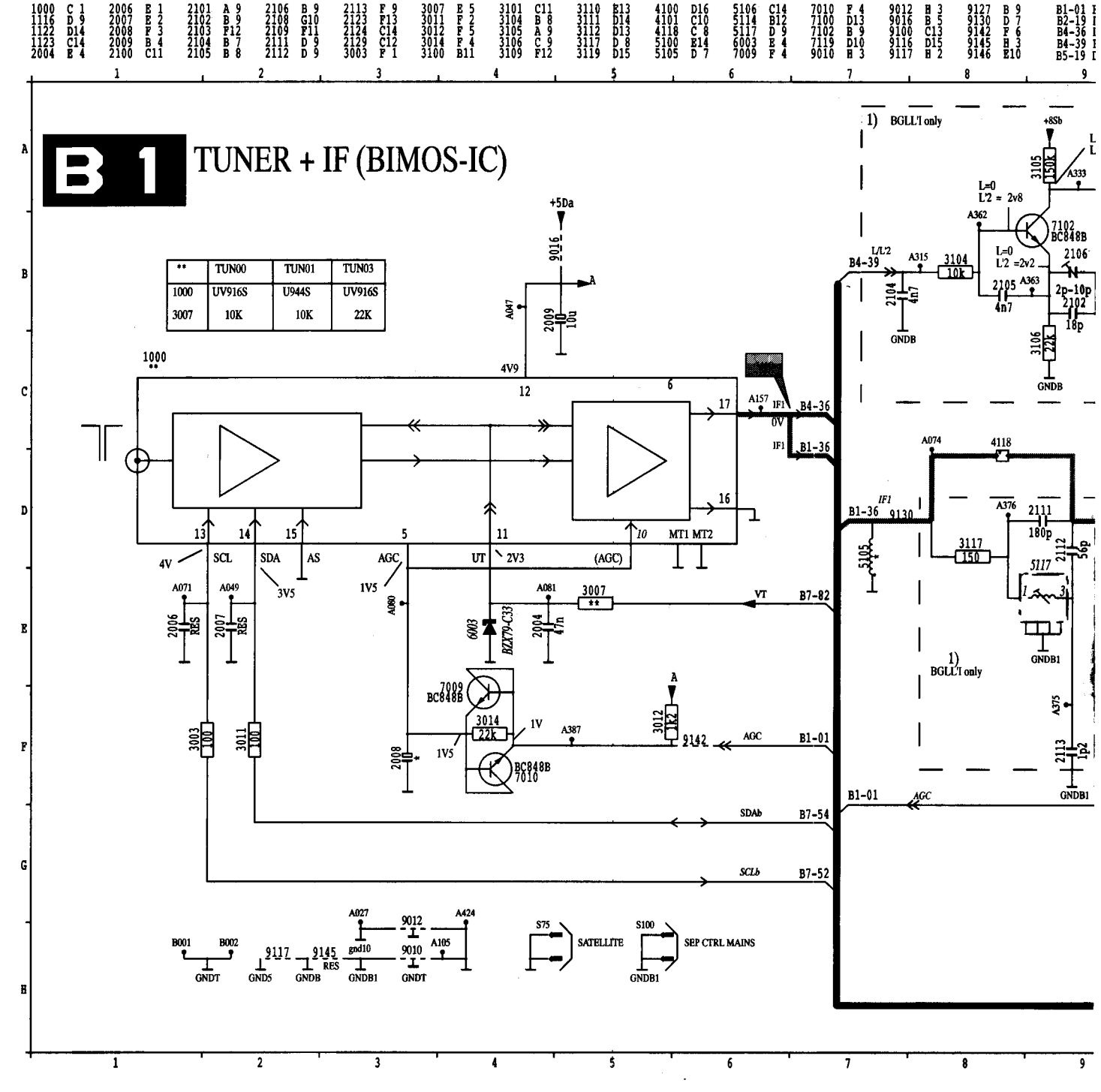

A1 AUDIO-L - 3KHz (volume increased)
50mV / div AC
0.5ms / div
A10 Audio amp. out 1KHz right (incr. volume)
0V2 / div AC
0.1ms / div
A2 AUDIO-R - 1KHz (volume level increased)
50mV / div AC
0.5ms / div
A11 Audio amp. out 3KHz left (incr. volume)
0V2 / div AC
0.2ms / div
OSC_A4.CDR

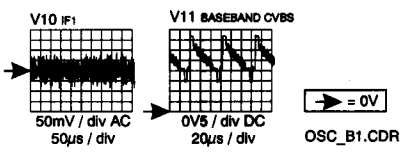
Audio amplifier / Ton Verstärker / Amplification audio



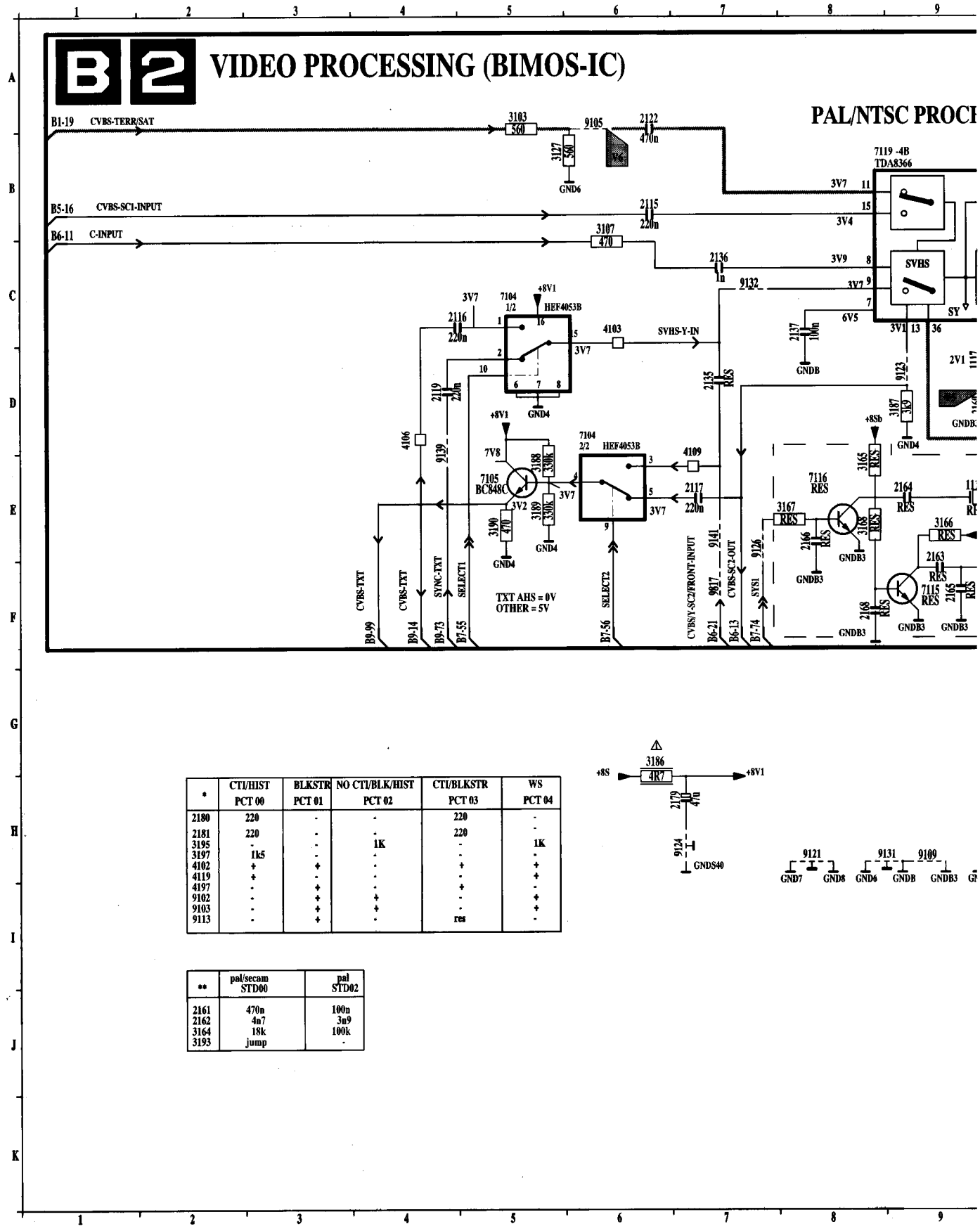
	2*12W SND01	2*8W SND02	2*5W SND03
2750	220u	220u	220u
2751	10u	1u	1u
2752	10u	4u7	4u7
2760	1u	1u	1u
2765	1000u	1000u	1000u
2766	1000u	1000u	1000u
2778	1n5	470p	470P
2787	22n	22n	22n
2789	4u7	1u	1u
3753	8R2	8R2	8R2
3754	2K2	2K2	2K2
3756	3K3	3K3	3K3
3757	4K3	4K3	4K3
3758	22K	22K	22K
3759	56K	56K	56K
3760	1k	1K5	1k8
3761	3k3	4K7	2k2
3762	120	10R	4k7
3764	8k2	5K6	8k2
7760	BC548B	BC548B	BC548B

Tuner + IF / Tuner + ZF / Syntoniseur + FI



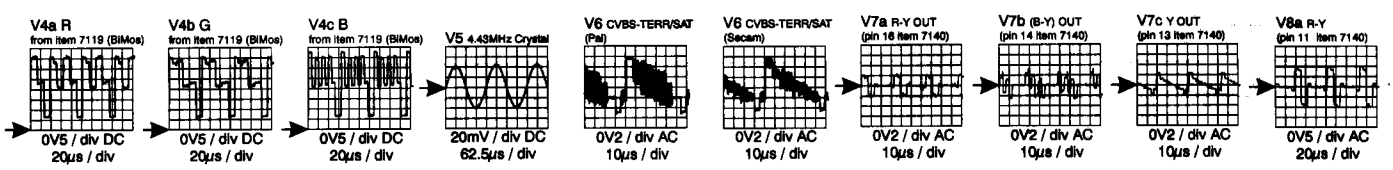


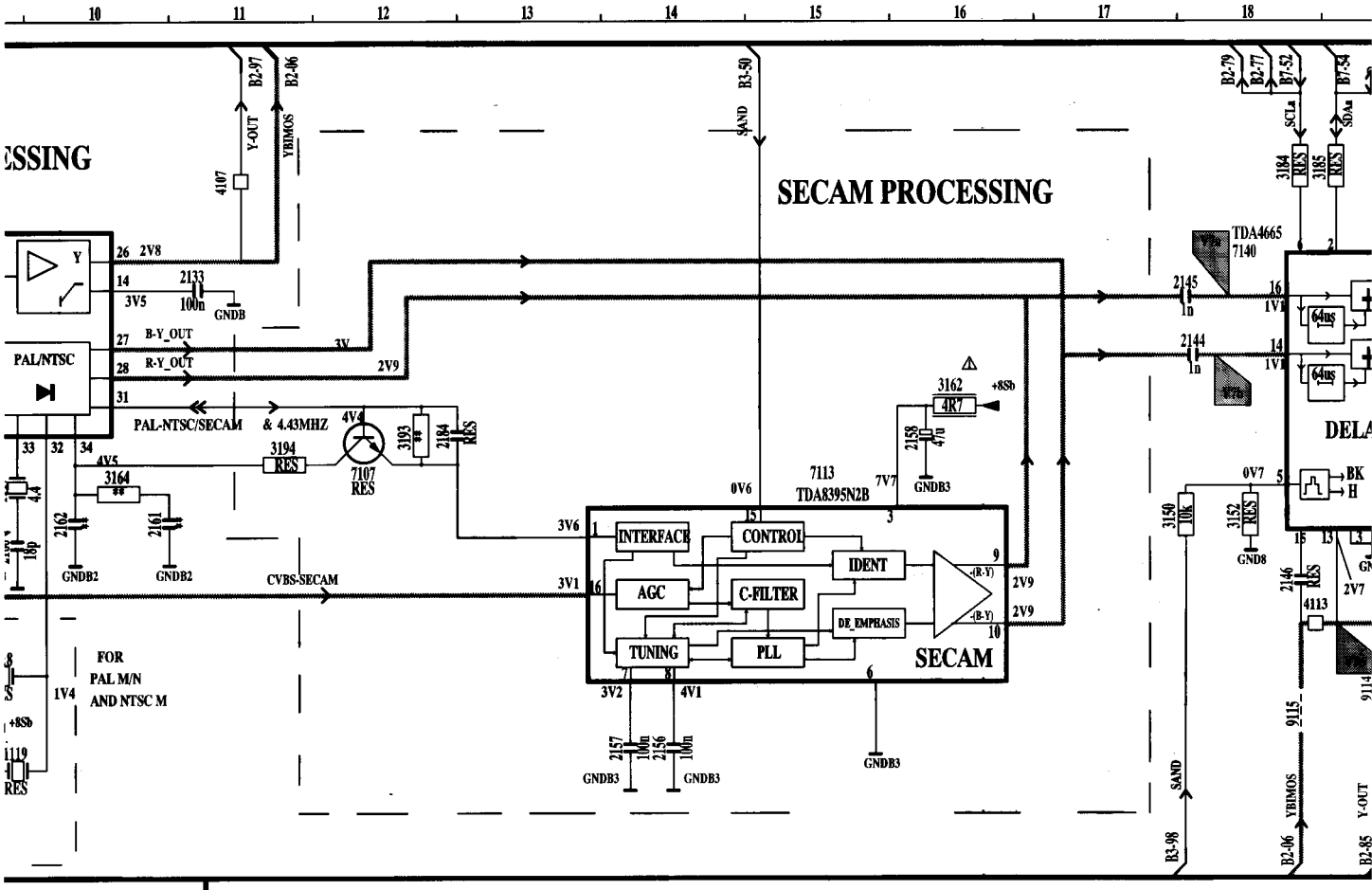
Video processing / Video Verarbeitung / Traitement video

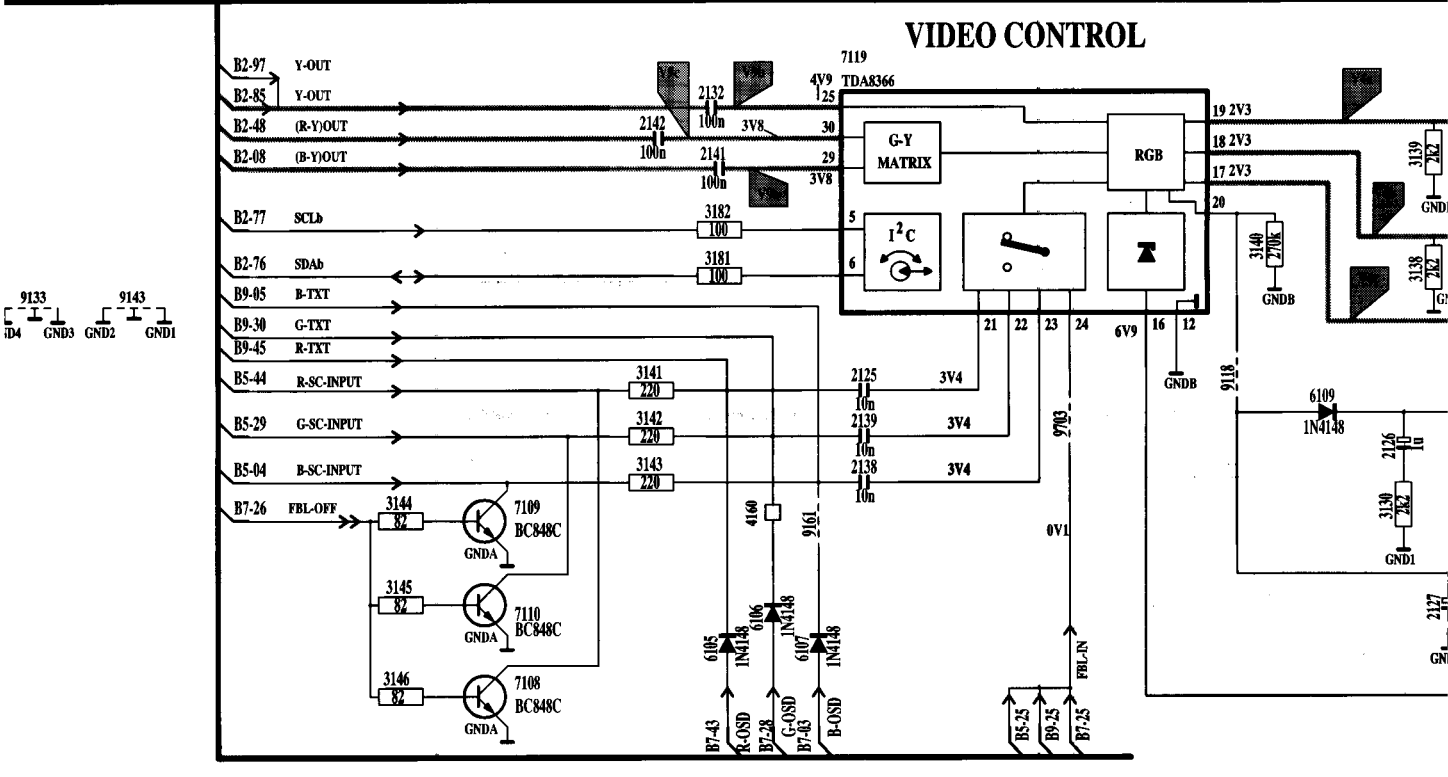


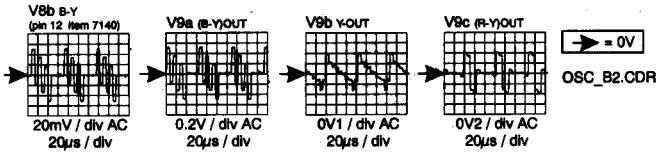
*	CTI/HIST PCT 00	BLKSTR PCT 01	NO CTI/BLK/HIST PCT 02	CTI/BLKSTR PCT 03	WS PCT 04
2180	220	-	-	220	-
2181	220	-	-	220	-
3195	-	-	1K	-	1K
3197	1k5	-	-	-	-
4102	+	+	-	+	+
4119	+	-	-	-	+
4197	-	+	-	+	-
9102	-	+	+	-	+
9103	-	+	+	-	+
9113	-	+	-	res	-

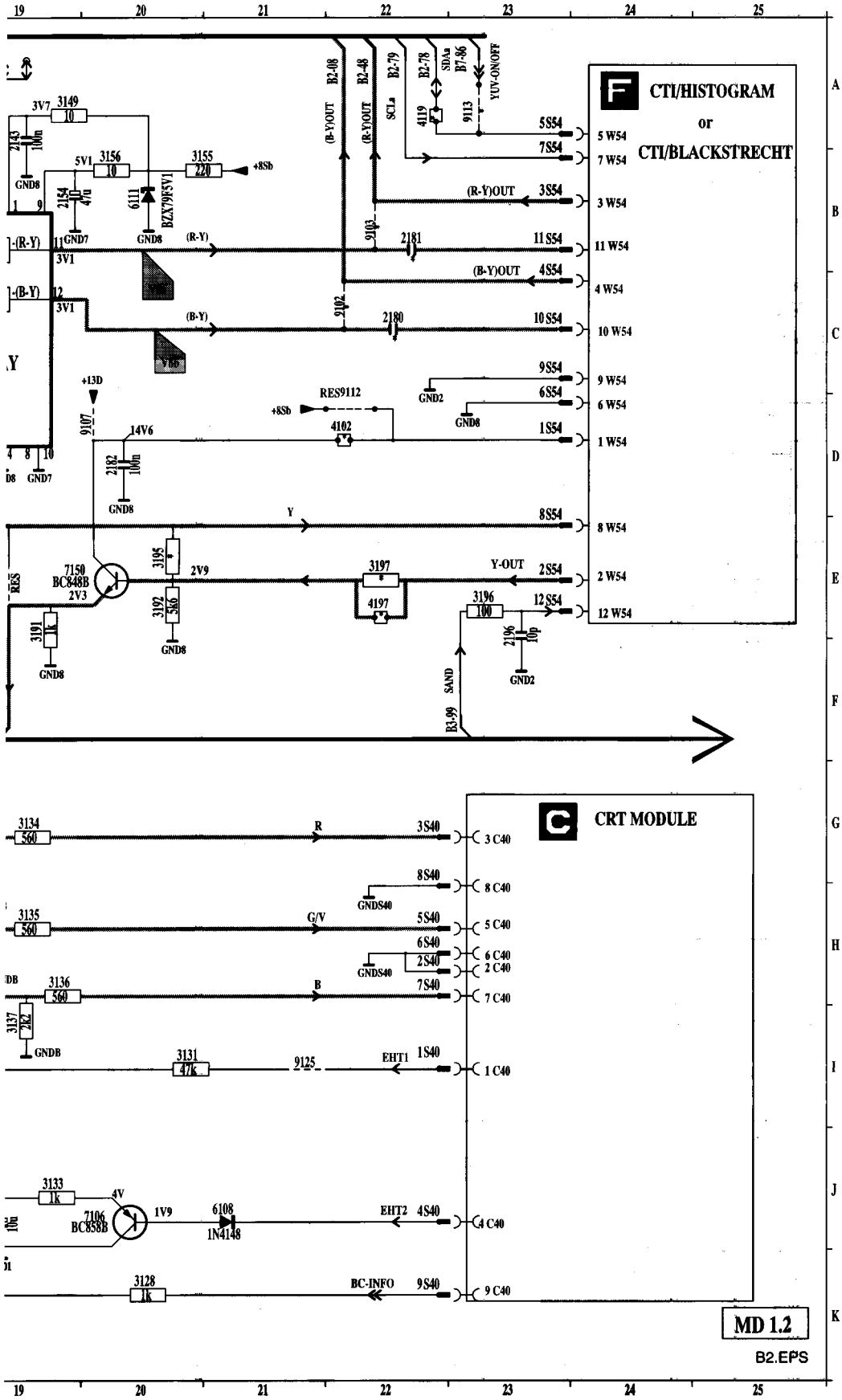
**	pal/secam STD00	pal STD02
2161	470n	100n
2162	4n7	3n9
3164	18k	100k
3193	jump	-



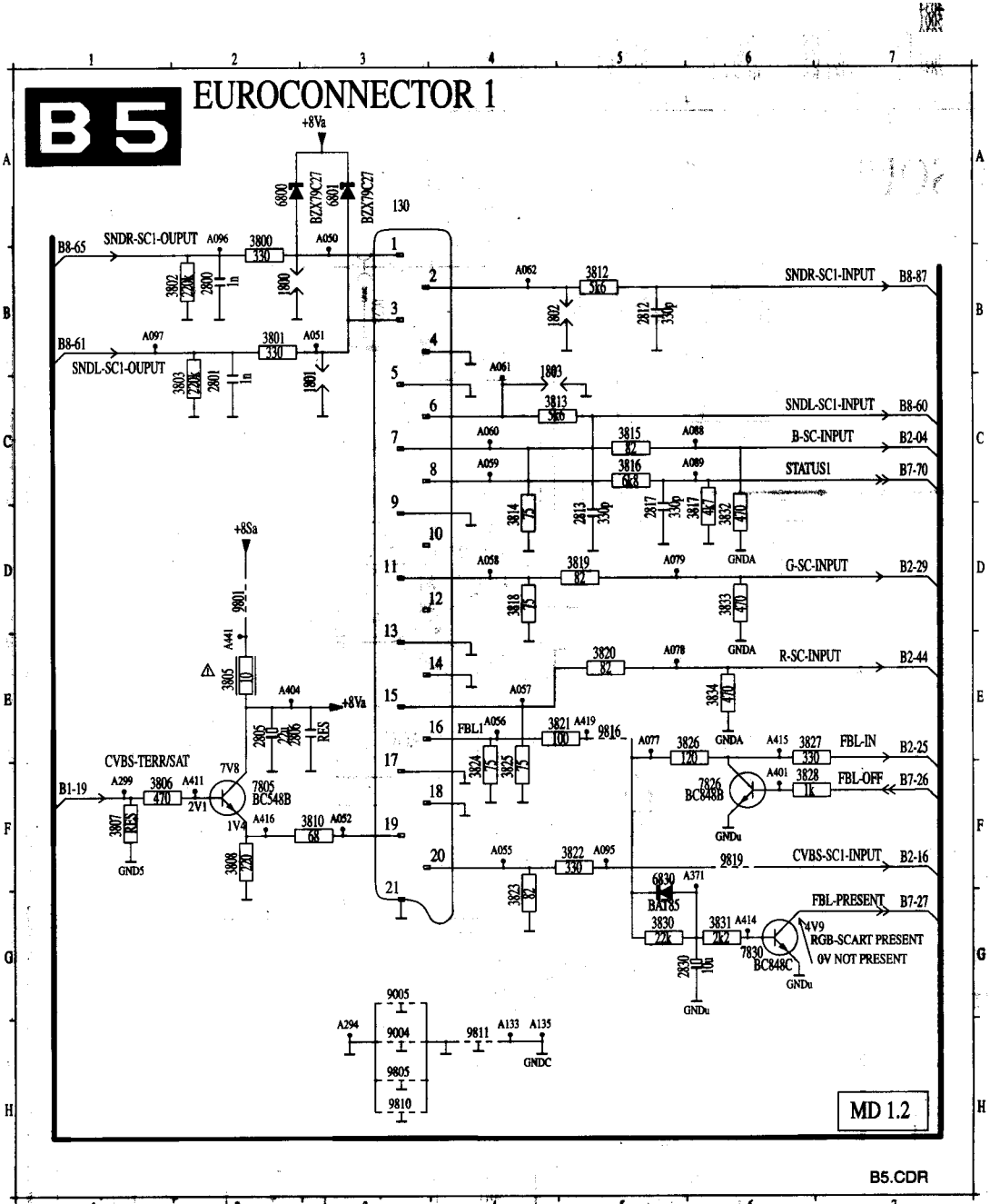

SECAM PROCESSING
TDA4665
7140
TDA8395N2B
7113
INTERFACE
CONTROL
IDENT
AGC
C-FILTER
DE_EMPHASIS
TUNING
PLL
SECAM
PAL/NTSC
PAL-NTSC/SECAM & 4.43MHZ
CVBS-SECAM
FOR
PAL M/N
AND NTSC M
Y-OUT
YBIMOS
SAND
B-Y_OUT
R-Y_OUT
SCLa
SDAa
DELA


VIDEO CONTROL
TDA8366
7119
G-Y
MATRIX
RGB
I²C
Y-OUT
(R-Y)OUT
(B-Y)OUT
SCLb
SDAb
B-TXT
G-TXT
R-TXT
R-SC-INPUT
G-SC-INPUT
B-SC-INPUT
FBL-OFF
BC848C
1N4148
FBL-IN
R-OSD
G-OSD
B-OSD

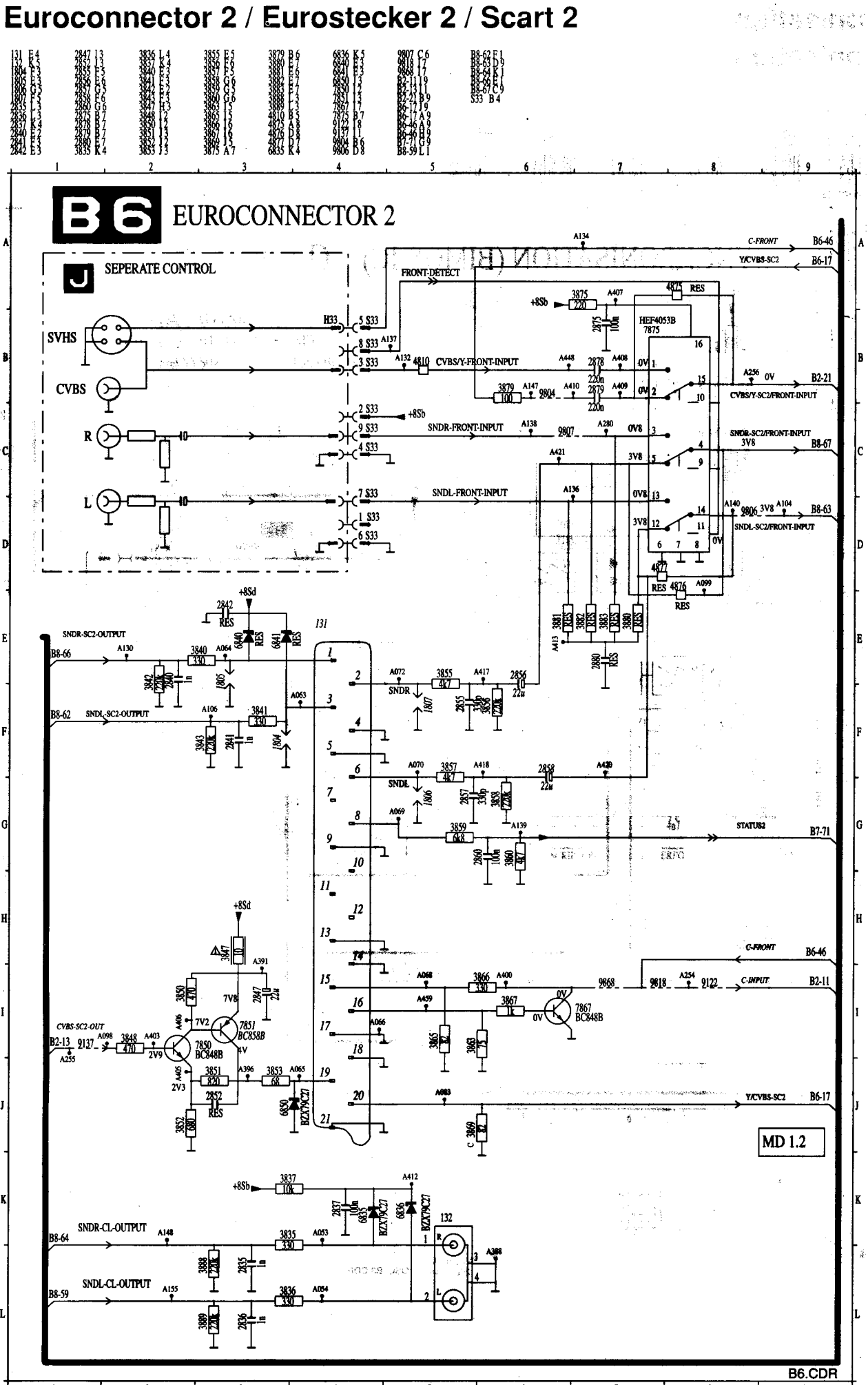

V8b B-Y
(pin 12 item 7140)
20mV / div AC
20µs / div
V9a (B-Y)OUT
0.2V / div AC
20µs / div
V9b Y-OUT
0V1 / div AC
20µs / div
V9c (R-Y)OUT
0V2 / div AC
20µs / div
= 0V
OSC_B2.CDR


F
CTI/HISTOGRAM
or
CTI/BLACKSTRECHT
5 W54
7 W54
3 W54
11 W54
4 W54
10 W54
9 W54
6 W54
1 W54
8 W54
2 W54
12 W54
(B-Y)OUT
(R-Y)OUT
YUV-ON/OFF
(R-Y)
(B-Y)
Y-OUT
SAND
RES9112
BZX79E5V1
BC848B
BC858B
1N4148
C
CRT MODULE
3 C40
8 C40
5 C40
6 C40
2 C40
7 C40
1 C40
4 C40
9 C40
R
G/V
B
EHT1
EHT2
BC-INFO
MD 1.2
B2.EPS

Euroconnector 1 / Eurostecker 1 / Scart 1

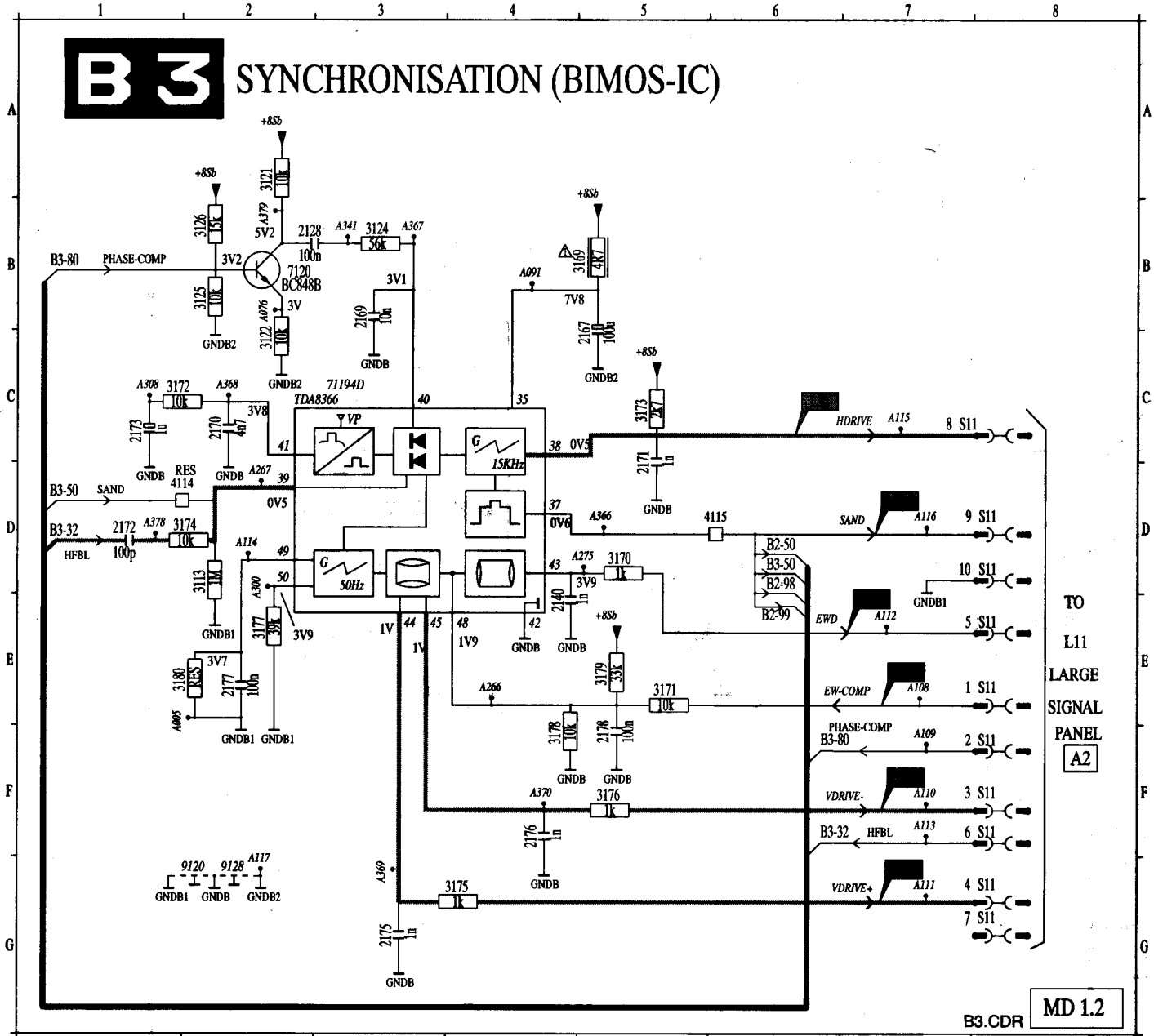


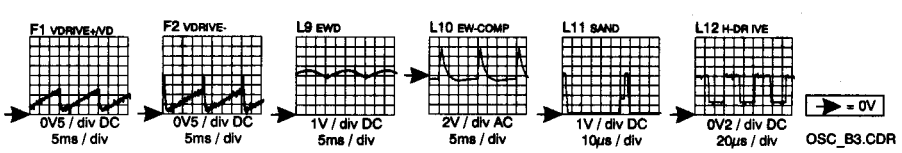
Euroconnector 2 / Eurostecker 2 / Scart 2



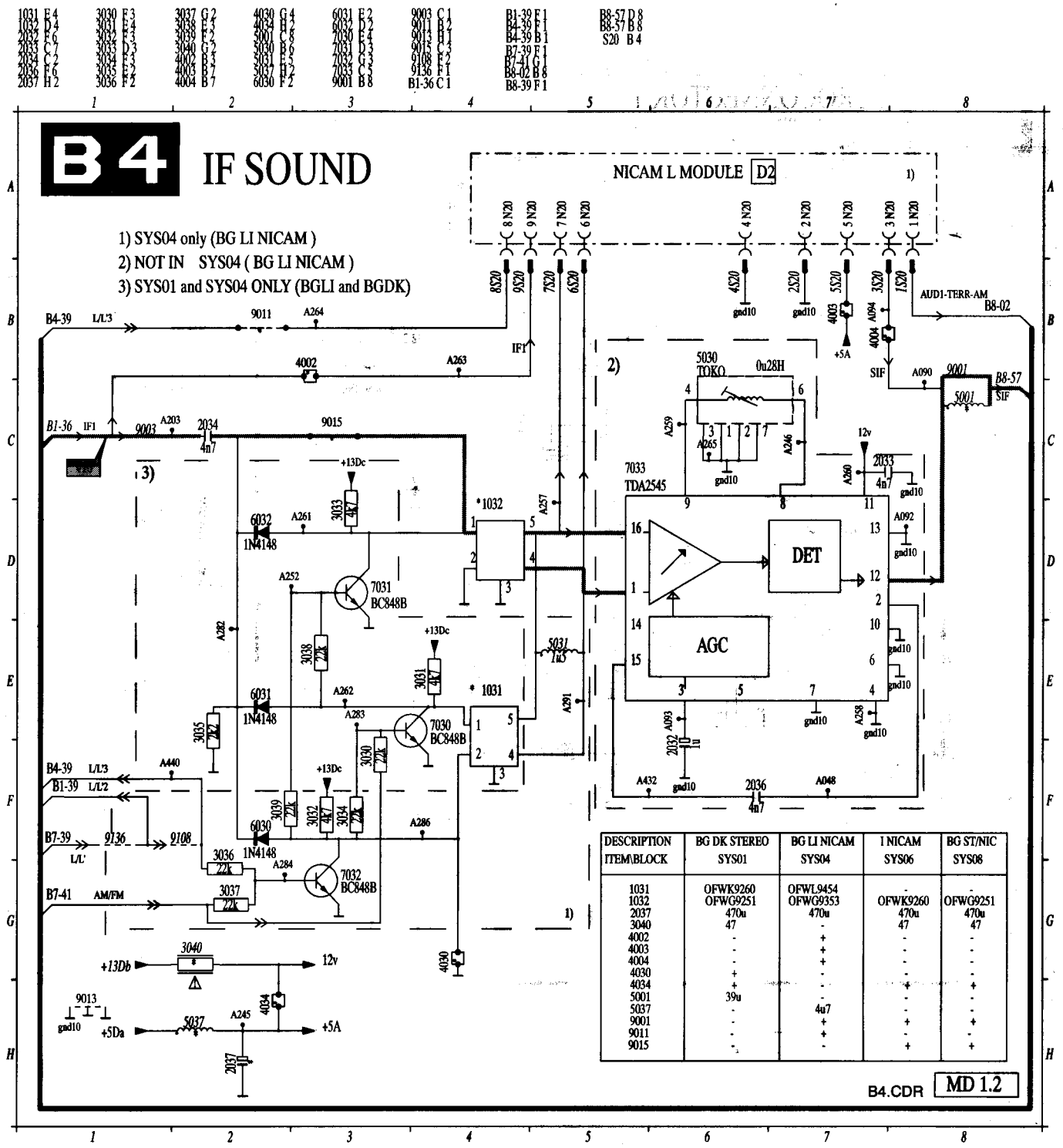
Synchronisation / Synchronisierung / Synchronisation

2128 B 2	2173 C 1	3122 C 2	3172 C 1	3179 E 5	9128 G 2	B3-80 F 6
2140 E 4	2175 G 3	3124 B 3	3173 C 5	3180 E 2	B2-50 D 6	S11 C 7
2167 B 5	2176 F 4	3125 B 2	3174 D 2	4114 D 2	B3-32 D 1	
2169 B 3	2177 E 2	3126 B 1	3175 G 4	4115 D 2	B3-35 E 6	
2170 C 2	2178 F 5	3169 B 5	3176 F 5	7119 C 3	B3-50 D 6	
2171 C 5	3113 D 2	3170 D 5	3177 E 2	7120 B 2	B3-50 D 1	
2172 D 1	3121 A 2	3171 E 5	3178 F 4	9120 G 2	B3-80 B 1	

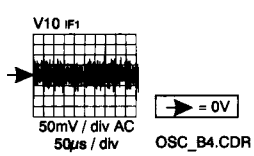




IF sound / ZF Ton / FI son



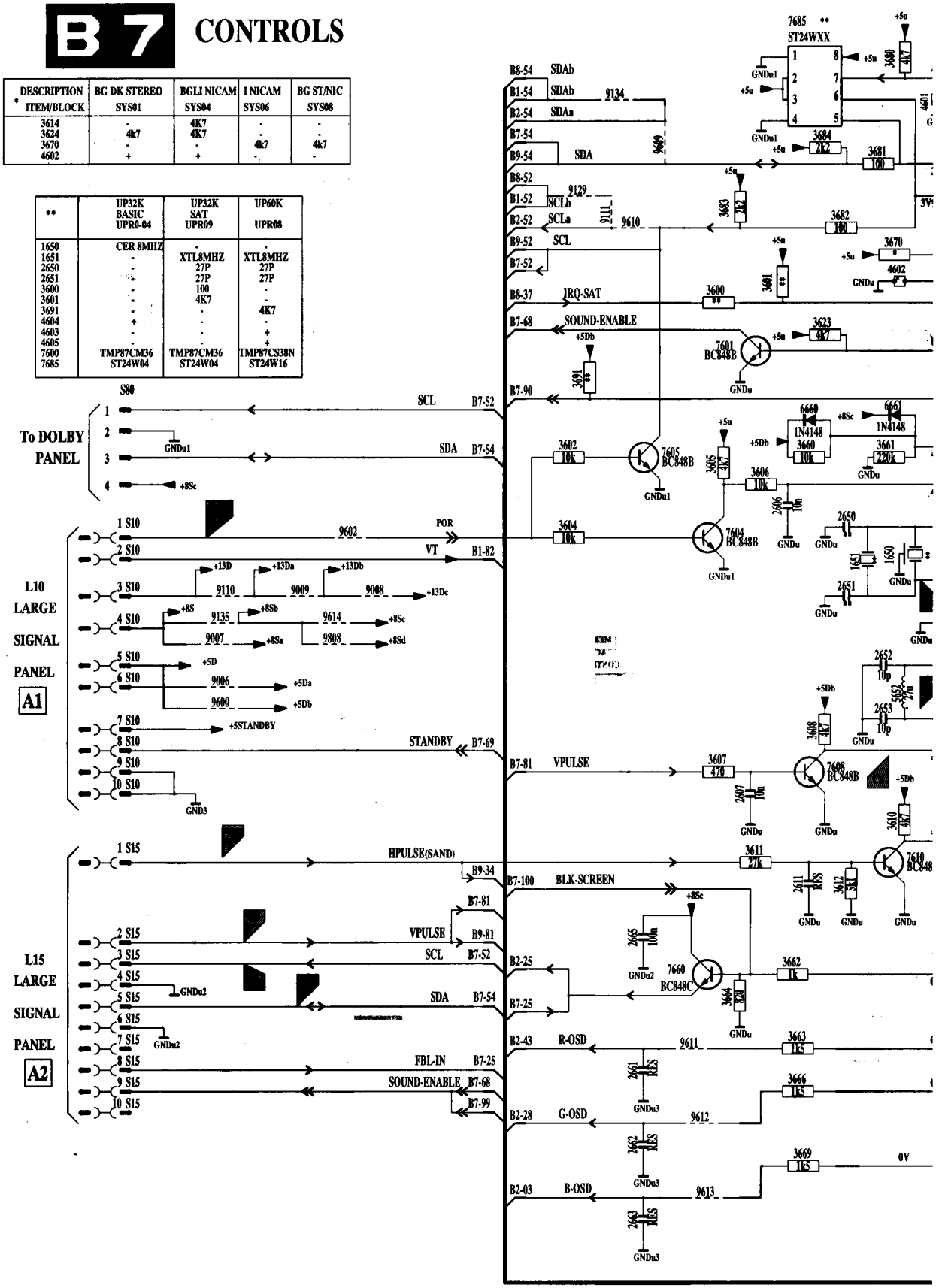
DESCRIPTION ITEM\BLOCK	BG DK STEREO SYS01	BG LI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
1031	OFWK9260	OFWL9454	-	-
1032	OFWG9251	OFWG9353	OFWK9260	OFWG9251
2037	470u	470u	470u	470u
3040	47	-	47	47
4002	-	+	-	-
4003	-	+	-	-
4004	-	+	-	-
4030	+	-	-	-
4034	+	-	+	+
5001	39u	-	-	-
5037	-	4u7	-	-
9001	-	+	+	+
9011	-	+	-	-
9015	-	-	+	+

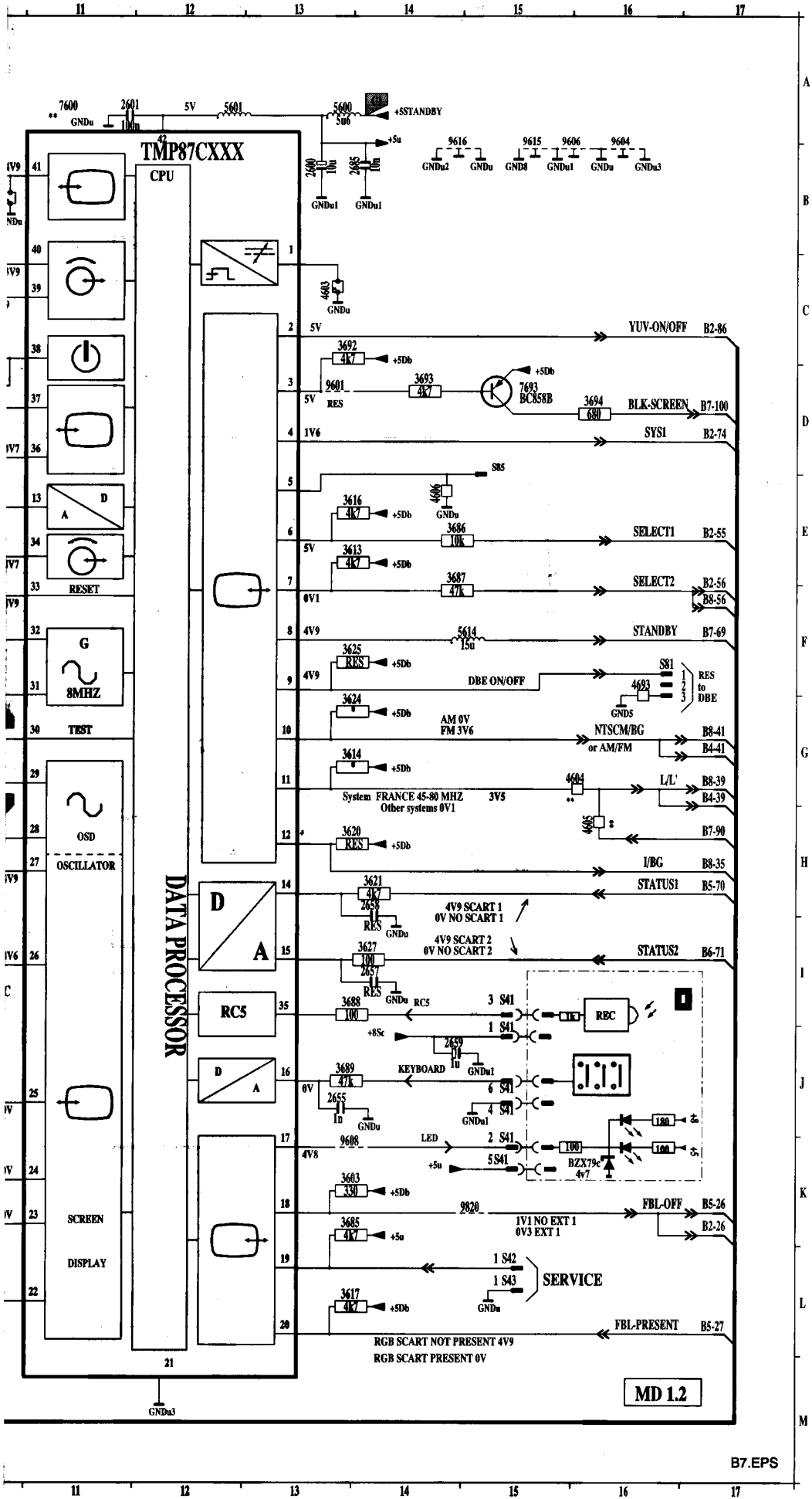


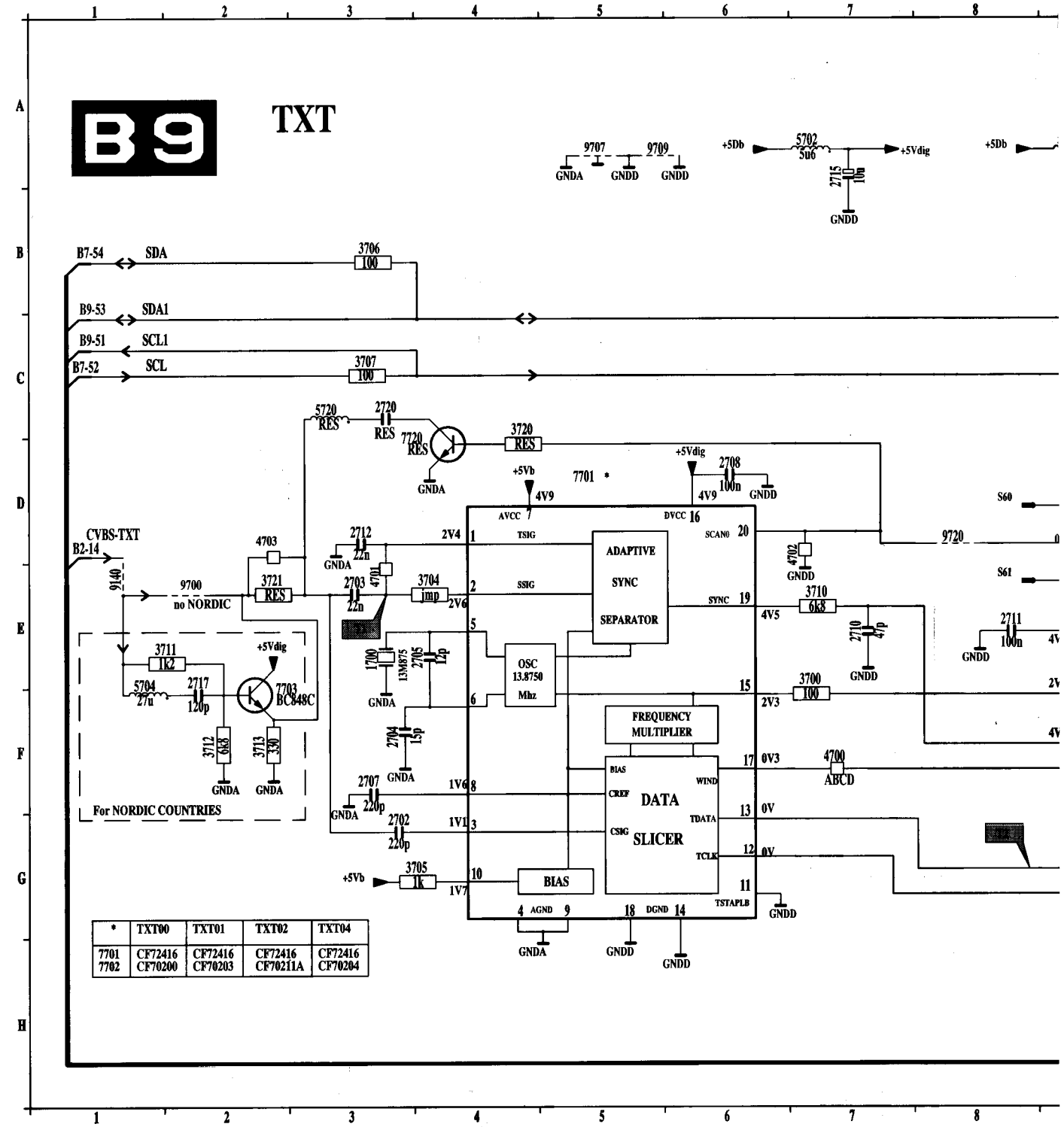
B 7 CONTROLS

* DESCRIPTION ITEM/BLOCK	BG DK STEREO SYS01	BGLI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
3614	-	4K7	-	-
3624	4k7	4K7	-	-
3670	-	-	4k7	4k7
4602	+	+	-	-

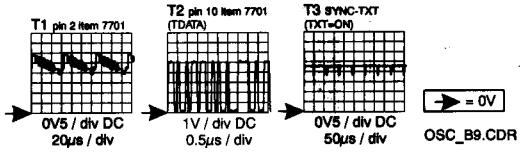
**	UP32K BASIC UPR0-04	UP32K SAT UPR09	UP60K UPR08
1650	CER 8MHZ	-	-
1651	-	XTL8MHZ	XTL8MHZ
2650	-	27P	27P
2651	-	27P	27P
3600	-	100	-
3601	-	4K7	-
3691	-	-	4K7
4604	+	-	-
4603	-	-	+
4605	-	-	+
7600	TMP87CM36 ST24W04	TMP87CM36 ST24W04	TMP87CS38N ST24W16
7685			

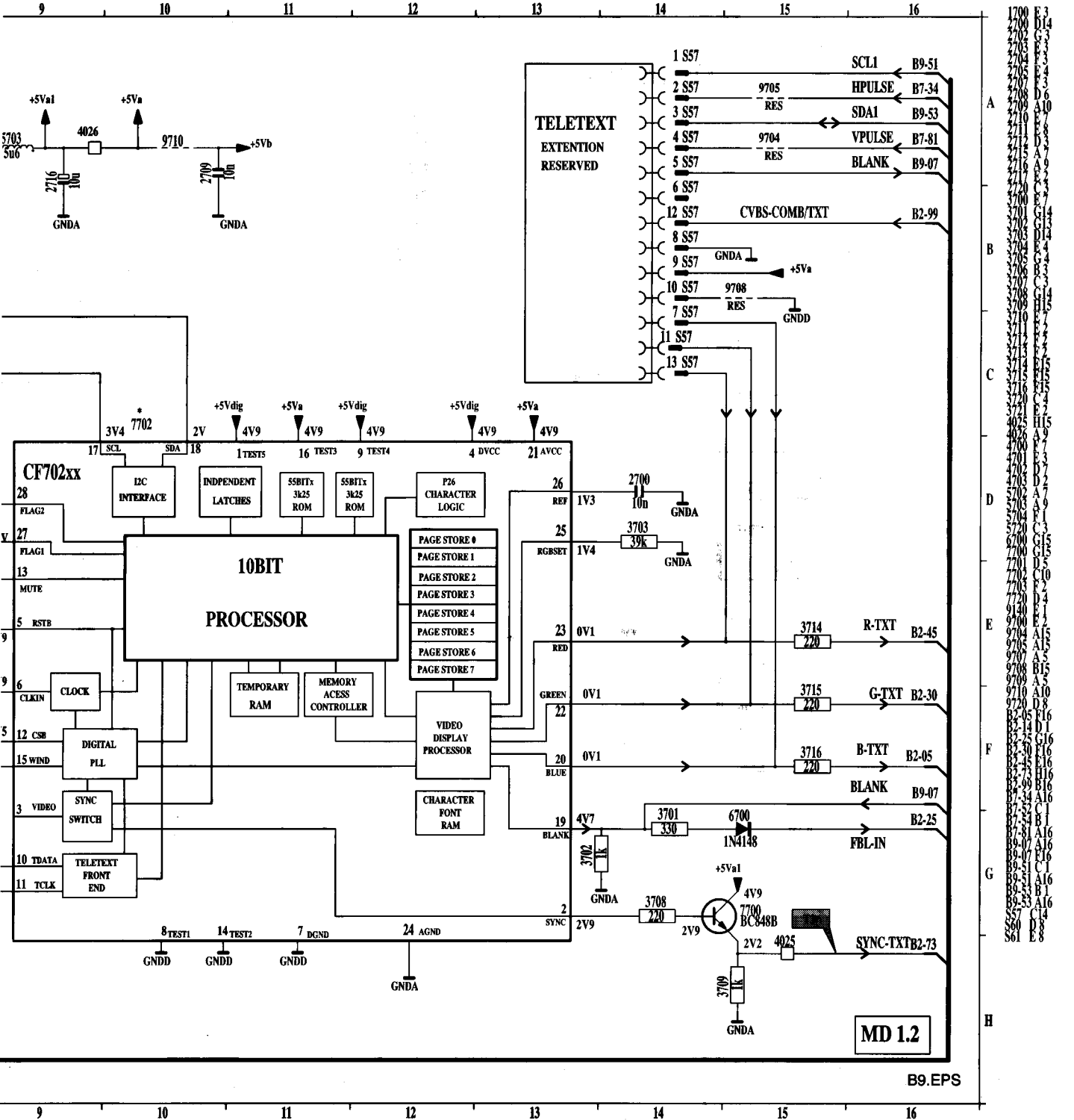



TMP87CXXX
CPU
DATA PROCESSOR
7600
2601
5V
5601
5600
+5STANDBY
+5u
9616
9615
9606
9604
GNDu
GNDu2
GND8
GNDu1
GNDu3
2600
2685
4603
YUV-ON/OFF
B2-86
3692
4K7
3693
9601
RES
7693
BC858B
3694
680
BLK-SCREEN
B7-100
1V6
SYS1
B2-74
S85
4606
3616
3686
10k
SELECT1
B2-55
3613
3687
47k
SELECT2
B2-56
B8-56
0V1
4V9
5614
15u
STANDBY
B7-69
3625
S81
DBE ON/OFF
RES to DBE
4693
GND5
3624
AM 0V
FM 3V6
NTSCM/BG
or AM/FM
B8-41
B4-41
3614
4604
L/L'
B8-39
B4-39
System FRANCE 45-80 MHZ
Other systems 0V1
3V5
4605
B7-90
3620
I/BG
B8-35
STATUS1
B5-70
3621
2658
4V9 SCART 1
0V NO SCART 1
4V9 SCART 2
0V NO SCART 2
STATUS2
B6-71
3627
2657
RC5
3688
REC
2659
KEYBOARD
3689
47k
2655
9608
LED
BZX79c
4v7
3603
330
9820
FBL-OFF
B5-26
B2-26
1V1 NO EXT 1
0V3 EXT 1
3685
1 S42
1 S43
SERVICE
3617
FBL-PRESENT
B5-27
RGB SCART NOT PRESENT 4V9
RGB SCART PRESENT 0V
MD 1.2
RESET
8MHZ
TEST
OSD
OSCILLATOR
SCREEN
DISPLAY
B7.EPS

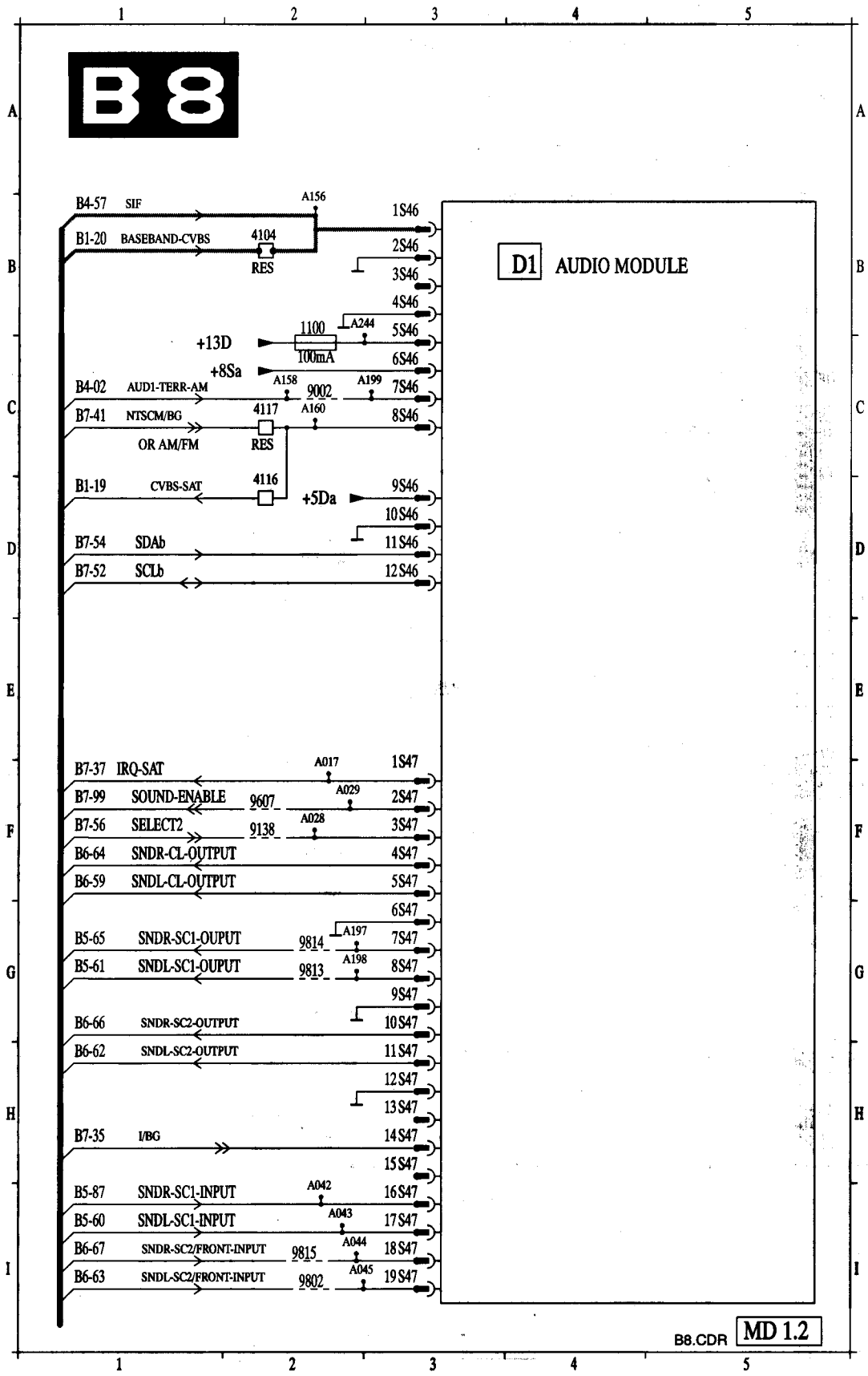


*	TXT00	TXT01	TXT02	TXT04
7701	CF72416	CF72416	CF72416	CF72416
7702	CF70200	CF70203	CF70211A	CF70204



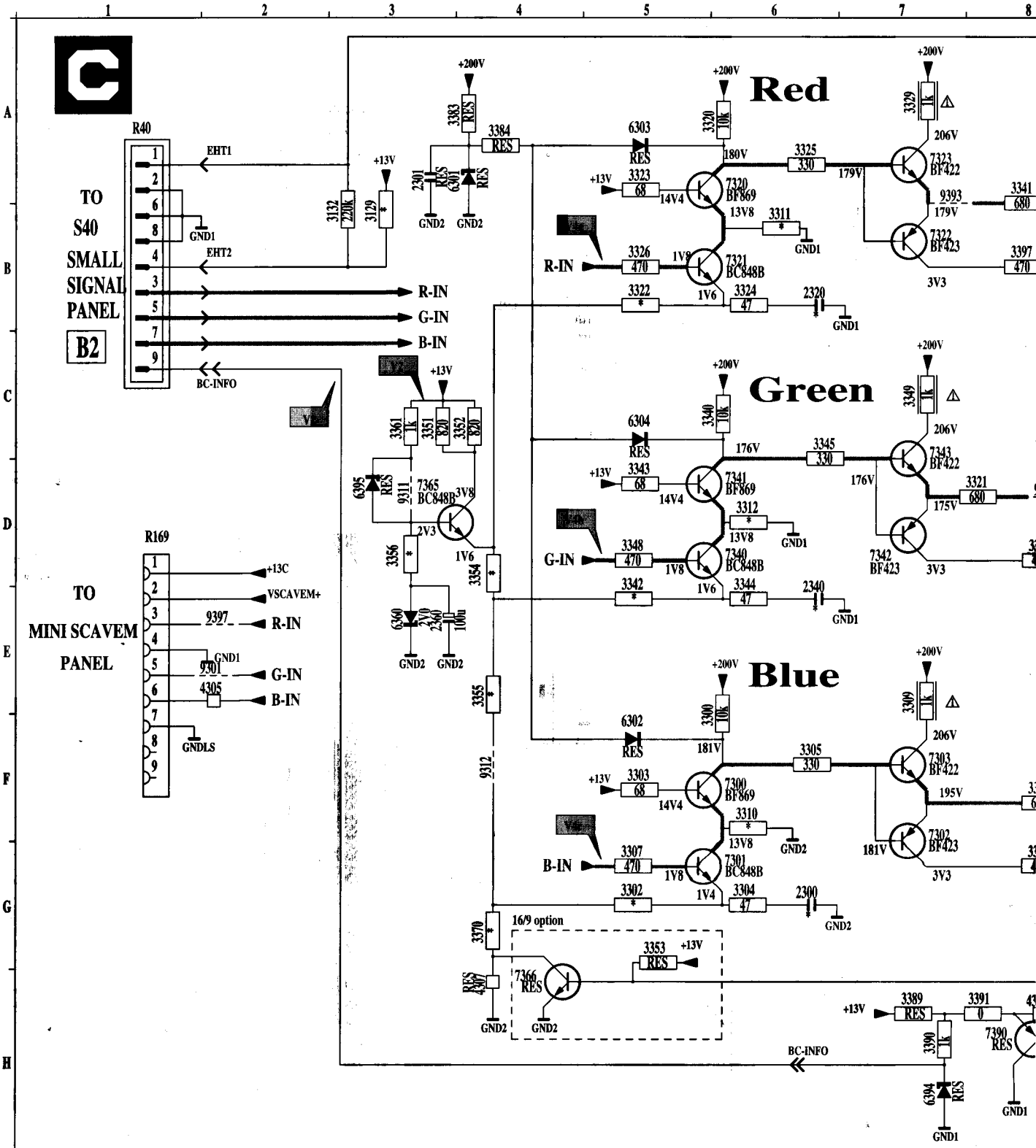

TELETEXT
EXTENTION
RESERVED
SCL1
HPULSE
SDA1
VPULSE
BLANK
CVBS-COMB/TXT
CF702xx
I2C INTERFACE
INDPENDENT LATCHES
P26 CHARACTER LOGIC
10BIT PROCESSOR
PAGE STORE 0
PAGE STORE 1
PAGE STORE 2
PAGE STORE 3
PAGE STORE 4
PAGE STORE 5
PAGE STORE 6
PAGE STORE 7
CLOCK
DIGITAL PLL
SYNC SWITCH
TELETEXT FRONT END
TEMPORARY RAM
MEMORY ACESS CONTROLLER
VIDEO DISPLAY PROCESSOR
CHARACTER FONT RAM
R-TXT
G-TXT
B-TXT
BLANK
FBL-IN
SYNC-TXT
MD 1.2
B9.EPS

Connections audio module / Verbindungen Audio Modul / Connections de module audio



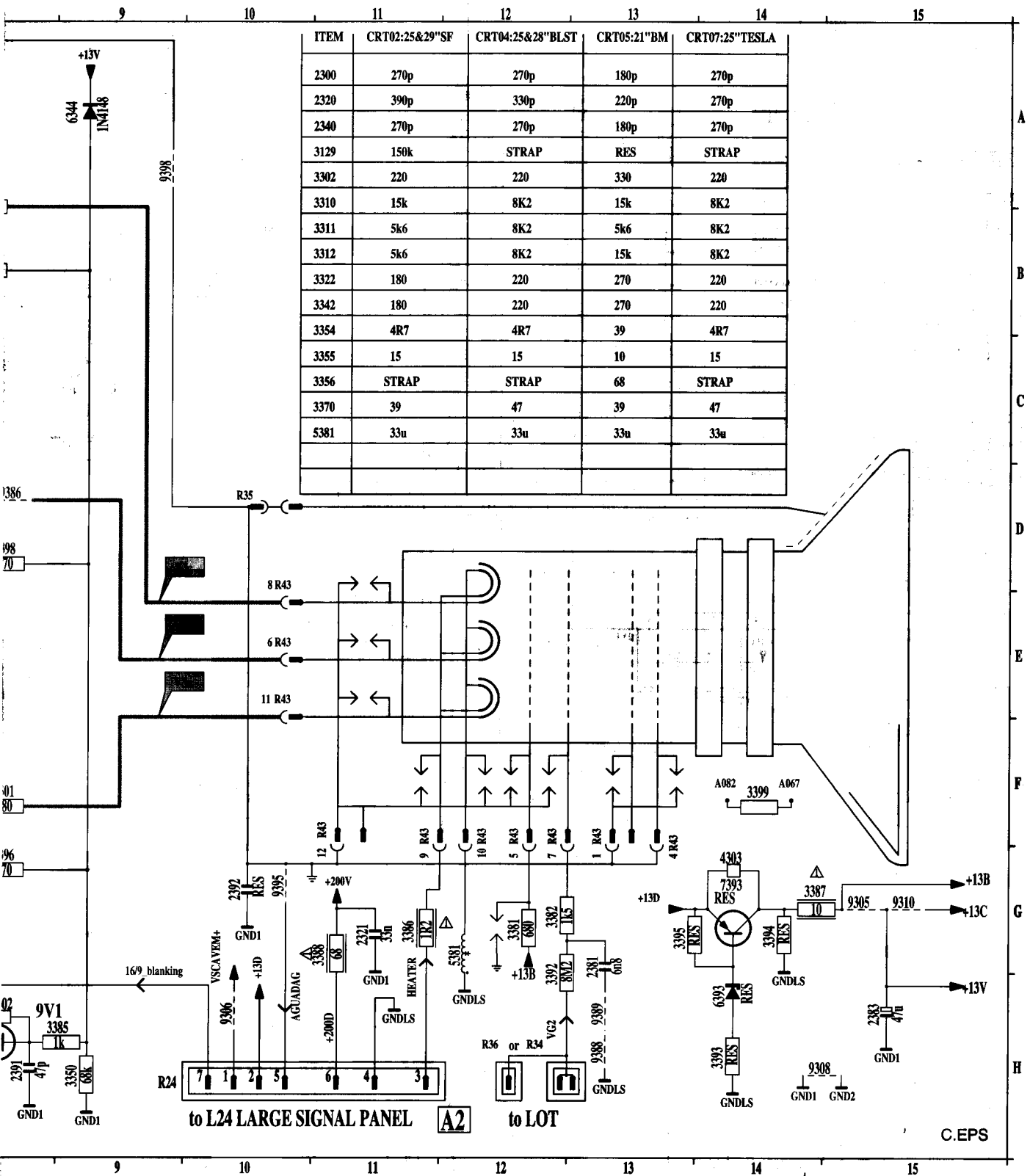
CRT panel / CRT-Platine / Platine tube cathodique

1000 C15	2360 E 3	3300 E 6	3309 E 7	3323 A 5	3342 E 5	3351 C 3	3370 G 4	3387 G14	3394 G14	4303 G14	6304 C 5	730
1300 G12	2381 G13	3301 F 8	3310 F 6	3324 B 6	3343 D 5	3352 C 4	3381 G12	3388 G11	3395 G13	4305 E 2	6344 A 9	730
2300 G 6	2383 H15	3302 G 5	3311 B 6	3325 A 6	3344 E 6	3353 G 5	3382 G12	3389 H 7	3396 G 8	4307 H 4	6360 E 3	730
2301 A 3	2391 H 8	3303 F 5	3312 D 6	3326 B 5	3345 C 6	3354 D 4	3383 A 4	3390 H 7	3397 B 8	5381 G12	6393 H14	732
2320 B 6	2392 G10	3304 G 6	3320 A 6	3329 A 7	3348 D 5	3355 E 4	3384 A 4	3391 H 8	3398 D 8	6301 A 4	6394 H 7	732
2321 G11	3129 B 3	3305 F 6	3321 D 8	3340 C 6	3349 C 7	3356 D 3	3385 H 9	3392 G12	3399 F14	6302 E 5	6395 D 3	732
2340 E 6	3132 B 3	3307 G 5	3322 B 5	3341 A 8	3350 H 9	3361 C 3	3386 G11	3393 H14	4302 H 8	6303 A 5	7300 F 6	732

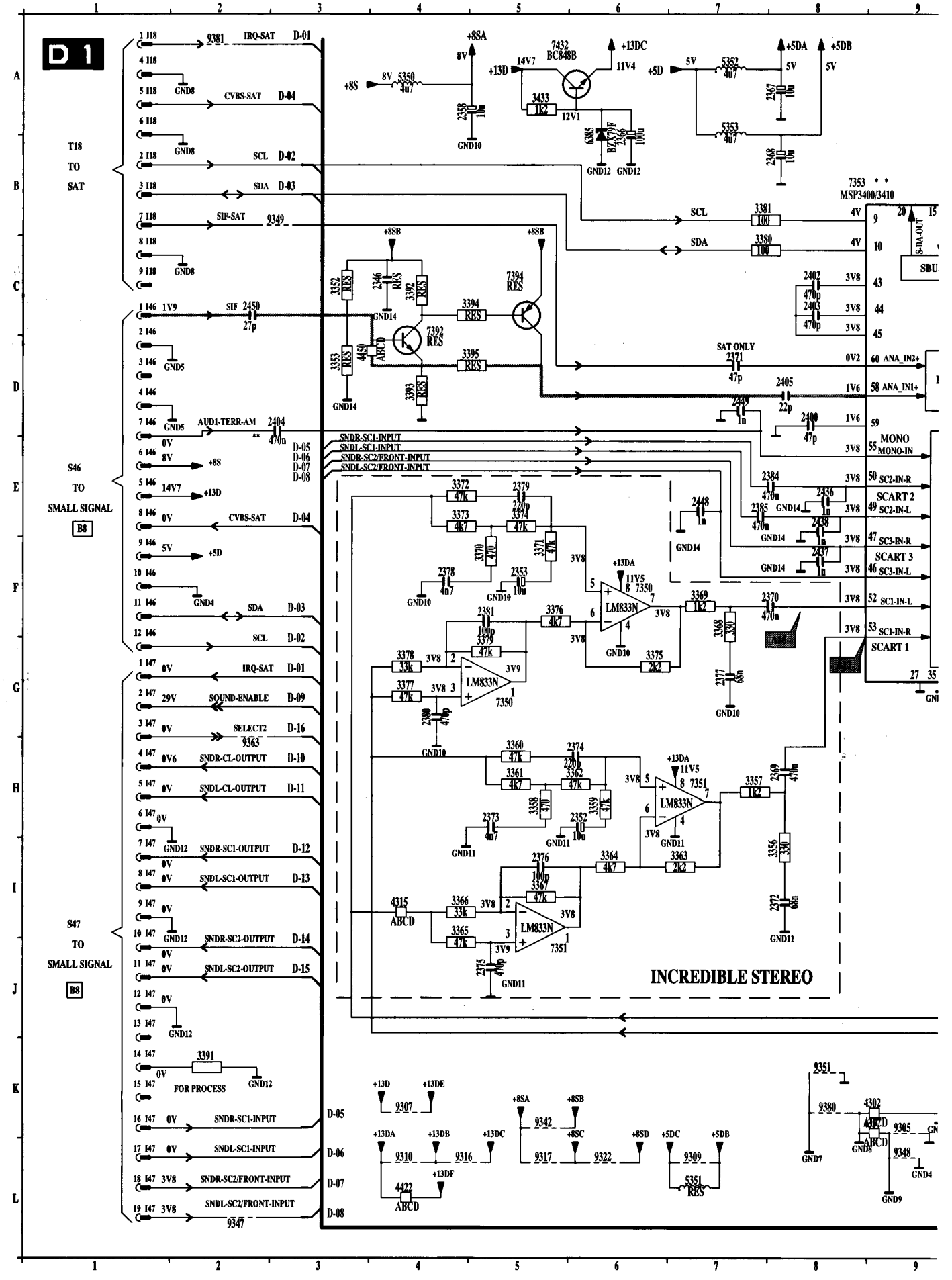


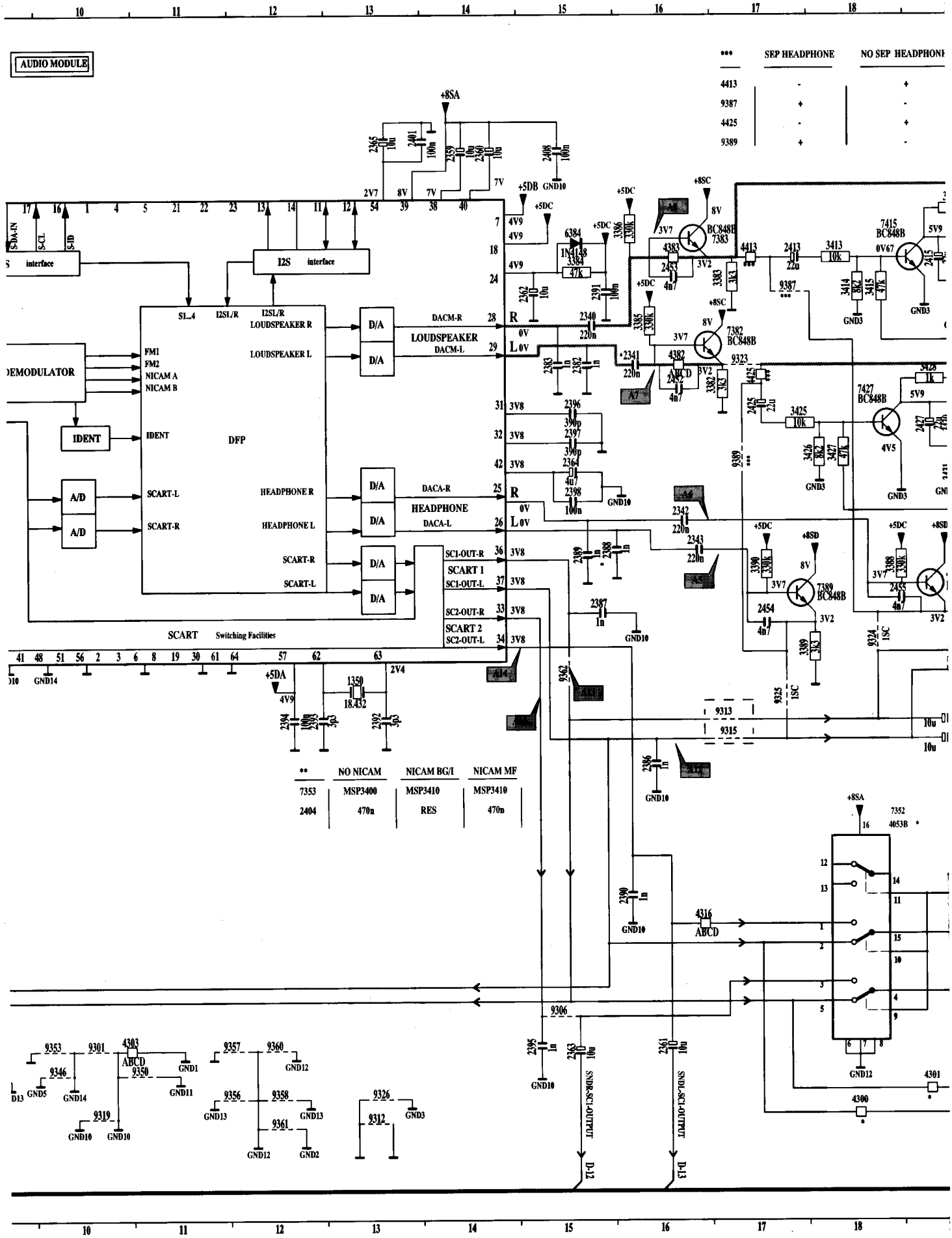
G 6	7340 D 6	7393 G14	9312 F 4	9398 A 9	R40 A 1		
F 7	7341 D 6	9301 E 2	9386 D 8	A067 F14	R43 E10		
F 7	7342 D 7	9305 G15	9388 H13	A082 F14	R169 D 1		
A 6	7343 C 7	9306 H10	9389 H13	R24 H 9			
B 6	7365 D 3	9308 H14	9393 A 7	R34 H12			
B 7	7366 H 4	9310 G15	9395 G10	R35 D10			
A 7	7390 H 8	9311 D 3	9397 E 2	R36 H12			

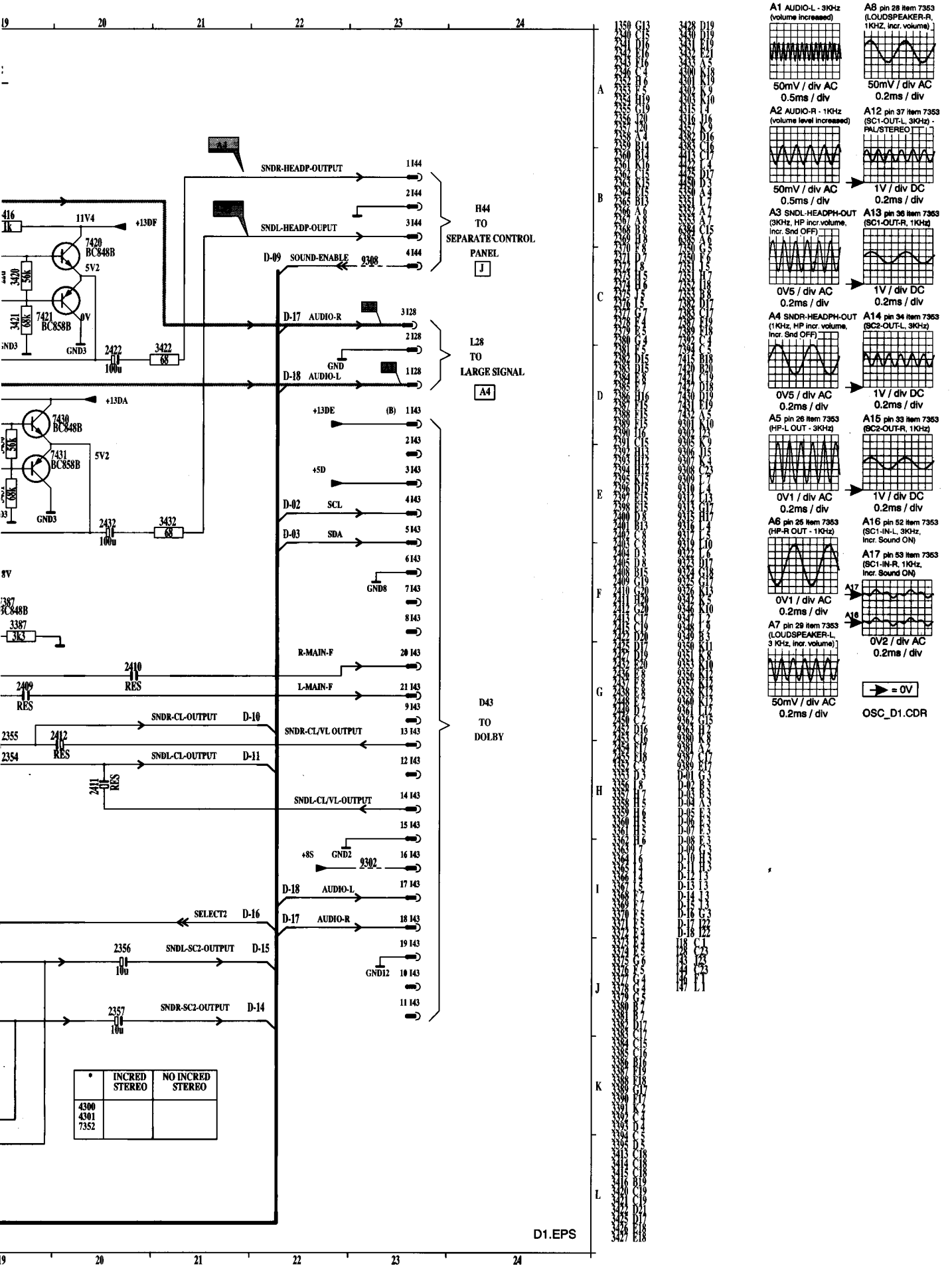
ITEM	CRT02:25&29"SF	CRT04:25&28"BLST	CRT05:21"BM	CRT07:25"TESLA
2300	270p	270p	180p	270p
2320	390p	330p	220p	270p
2340	270p	270p	180p	270p
3129	150k	STRAP	RES	STRAP
3302	220	220	330	220
3310	15k	8K2	15k	8K2
3311	5k6	8K2	5k6	8K2
3312	5k6	8K2	15k	8K2
3322	180	220	270	220
3342	180	220	270	220
3354	4R7	4R7	39	4R7
3355	15	15	10	15
3356	STRAP	STRAP	68	STRAP
3370	39	47	39	47
5381	33u	33u	33u	33u



Audio module / Audio Modul / Module audio




AUDIO MODULE
*** SEP HEADPHONE NO SEP HEADPHONE
4413 - +
9387 + -
4425 - +
9389 + -
+8SA
+5DB
+5DC
+8SC
+5DA
+8SD
I2S interface
DFP
DEMODULATOR
IDENT
A/D
D/A
LOUDSPEAKER
HEADPHONE
SCART 1
SCART 2
SCART Switching Facilities
DACM-R
DACM-L
DACA-R
DACA-L
SCART-L
SCART-R
HEADPHONE R
HEADPHONE L
LOUDSPEAKER R
LOUDSPEAKER L
SC1-OUT-R
SC1-OUT-L
SC2-OUT-R
SC2-OUT-L
** NO NICAM NICAM BG/I NICAM MF
7353 MSP3400 MSP3410 MSP3410
2404 470n RES 470n
BC848B
ABCD
GND10
GND3
GND12
GND14
SNB-SCL-OUT
SDA-OUT



A1 AUDIO-L - 3KHz (volume increased)
50mV / div AC
0.5ms / div

A8 pin 28 item 7353 (LOUDSPEAKER-R, 1KHZ, incr. volume)
50mV / div AC
0.2ms / div

A2 AUDIO-R - 1KHz (volume level increased)
50mV / div AC
0.5ms / div

A12 pin 37 item 7353 (SC1-OUT-L, 3KHz) - PAL/STEREO
1V / div DC
0.2ms / div

A3 SNDL-HEADPH-OUT (3KHz, HP incr.volume, incr. Snd OFF)
0V5 / div AC
0.2ms / div

A13 pin 36 item 7353 (SC1-OUT-R, 1KHz)
1V / div DC
0.2ms / div

A4 SNDR-HEADPH-OUT (1KHz, HP incr. volume, incr. Snd OFF)
0V5 / div AC
0.2ms / div

A14 pin 34 item 7353 (SC2-OUT-L, 3KHz)
1V / div DC
0.2ms / div

A5 pin 26 item 7353 (HP-L OUT - 3KHz)
0V1 / div AC
0.2ms / div

A15 pin 33 item 7353 (SC2-OUT-R, 1KHz)
1V / div DC
0.2ms / div

A6 pin 25 item 7353 (HP-R OUT - 1KHz)
0V1 / div AC
0.2ms / div

A16 pin 52 item 7353 (SC1-IN-L, 3KHz, Incr. Sound ON)

A17 pin 53 item 7353 (SC1-IN-R, 1KHz, Incr. Sound ON)

A7 pin 29 item 7353 (LOUDSPEAKER-L, 3 KHz, incr. volume)
50mV / div AC
0.2ms / div

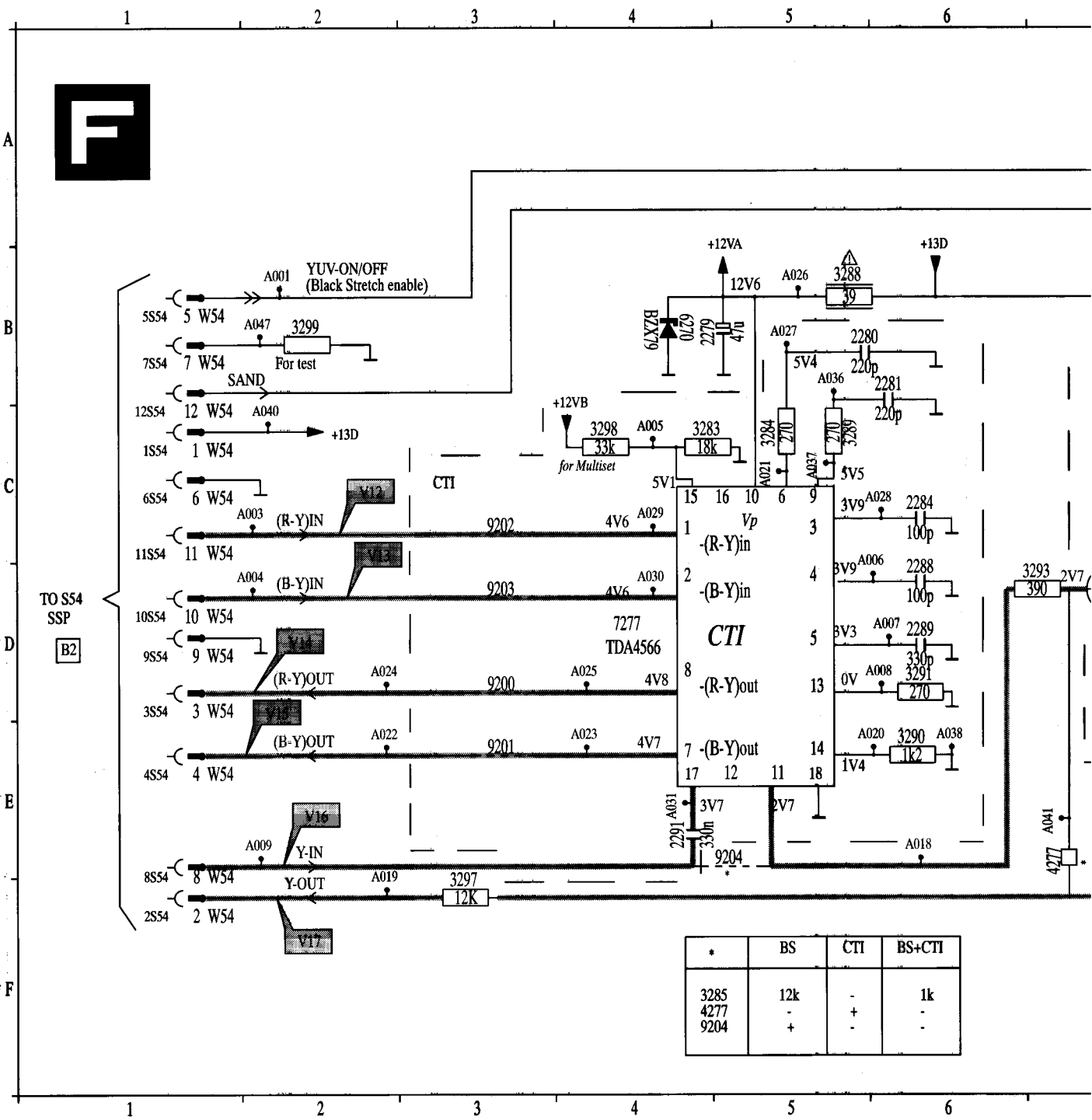
0V2 / div AC
0.2ms / div

= 0V

OSC_D1.CDR

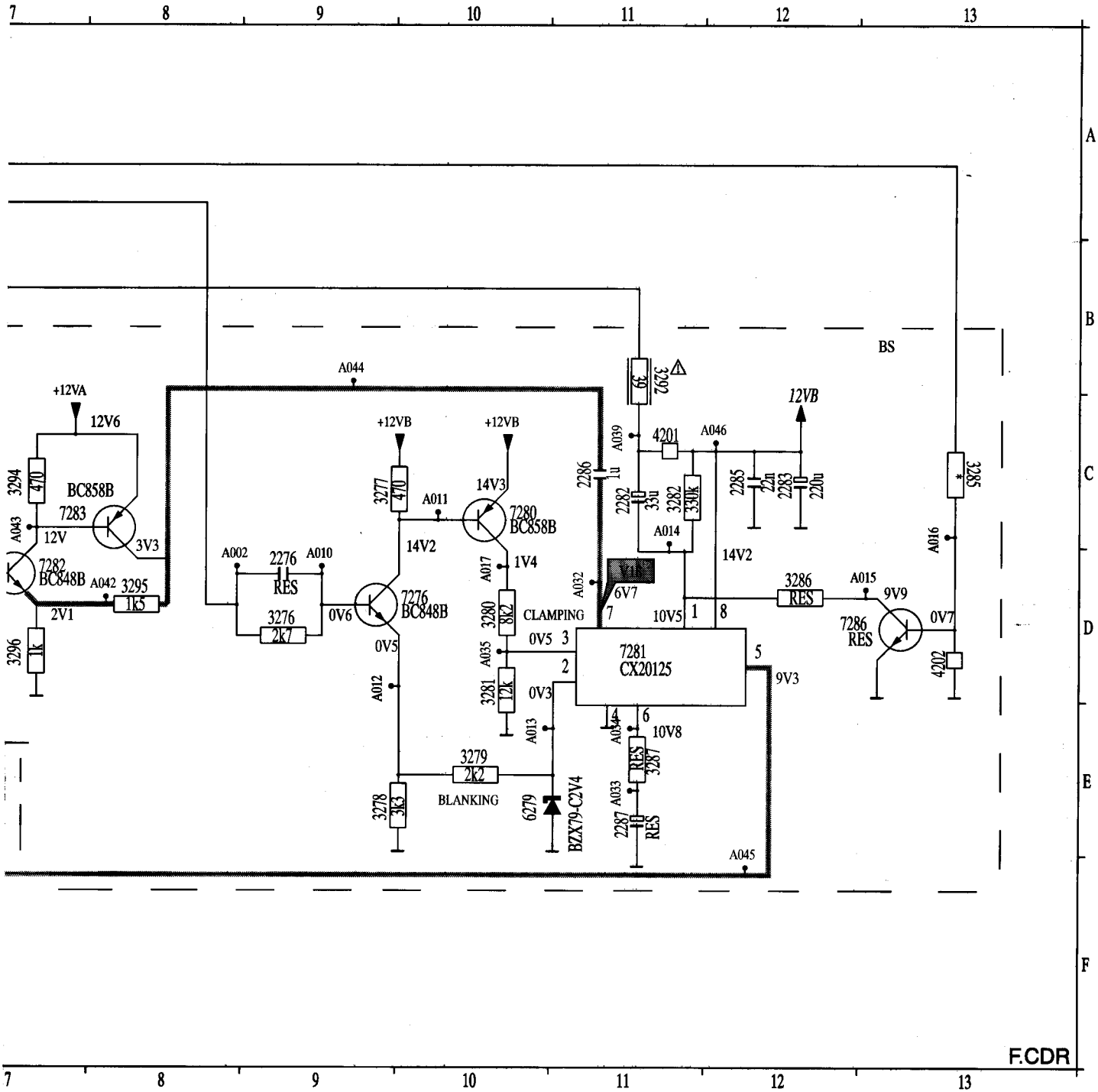
CTI/Black Stretch panel /

2276 D 9
2279 B 5
2280 B 5
2281 B 6
2282 C11
2283 C12
2284 C 6
2285 C12
2286 C11
2287 E11
2288 D 6
2289 D 6
2291 E 4
3276 D 9
3277 C 9
3278 E 9
3279 E10
3280 D10
3281 D10
3282 C11
3283 C 4
3284 C 5
3285 C13
3286 D12
3287 E11
3288 B 5
3289 C 5
3290 E 6
3291 D 6
3292 B11
3293 D 7
3294 C 7
3295 D 8
3296 D 7
3297 F 3
3298 C 4
3299 B 2
4201 C11
4202 D13
4277 E 7
6270 B 4
6279 E10
7276 D10
7277 D 4
7280 C10
7281 D11
7282 D 7
7283 C 7
7286 D13
9200 D 3
9201 E 3
9202 C 3
9203 D 3
9204 E 5
W54 B 1



*	BS	CTI	BS+CTI
3285	12k	-	1k
4277	-	+	-
9204	+	-	-

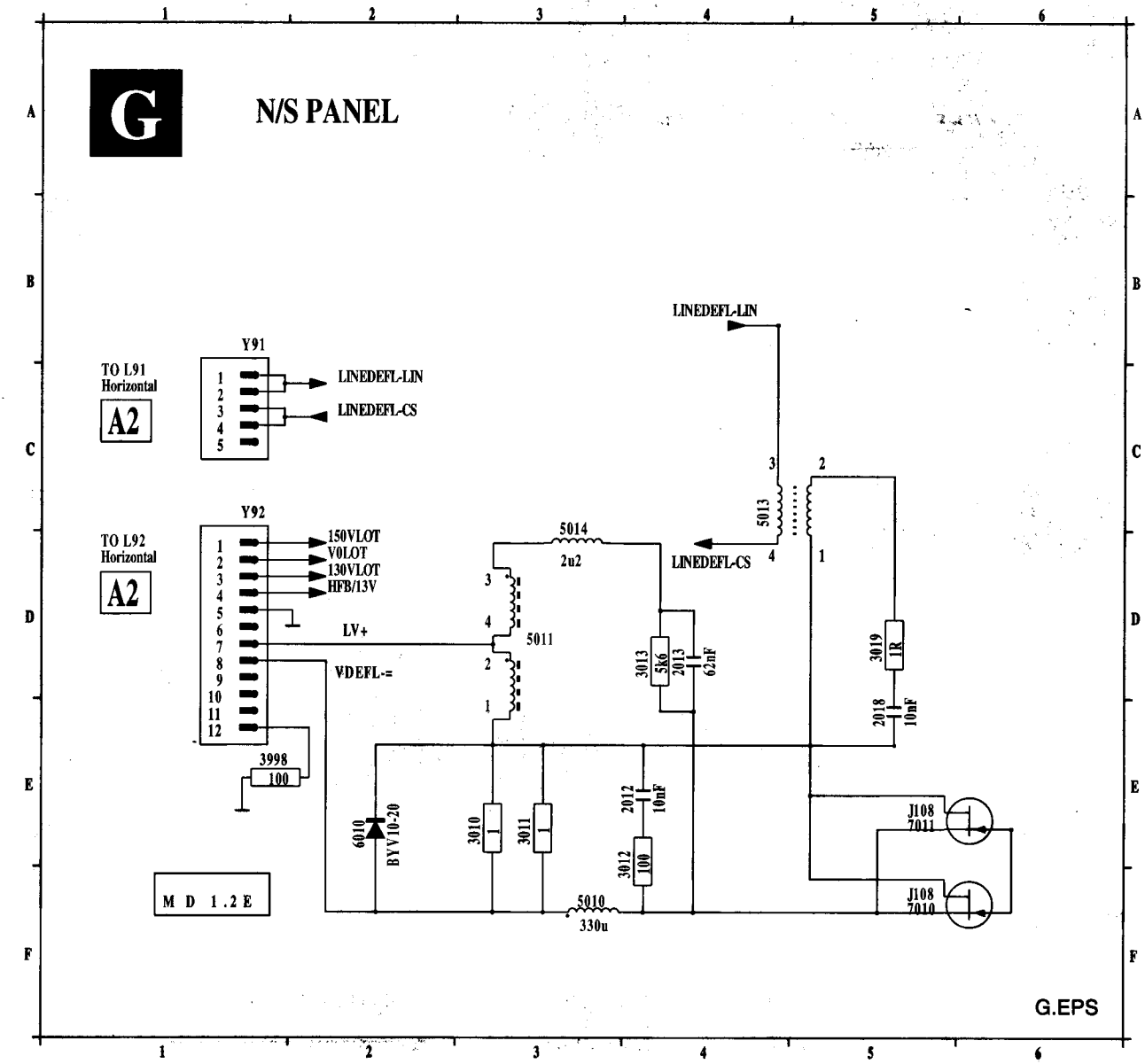
CTI/Black Stretch Platine / Platine CTI/Black Stretch

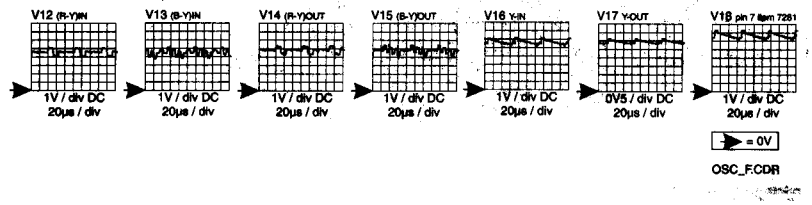


F.CDR

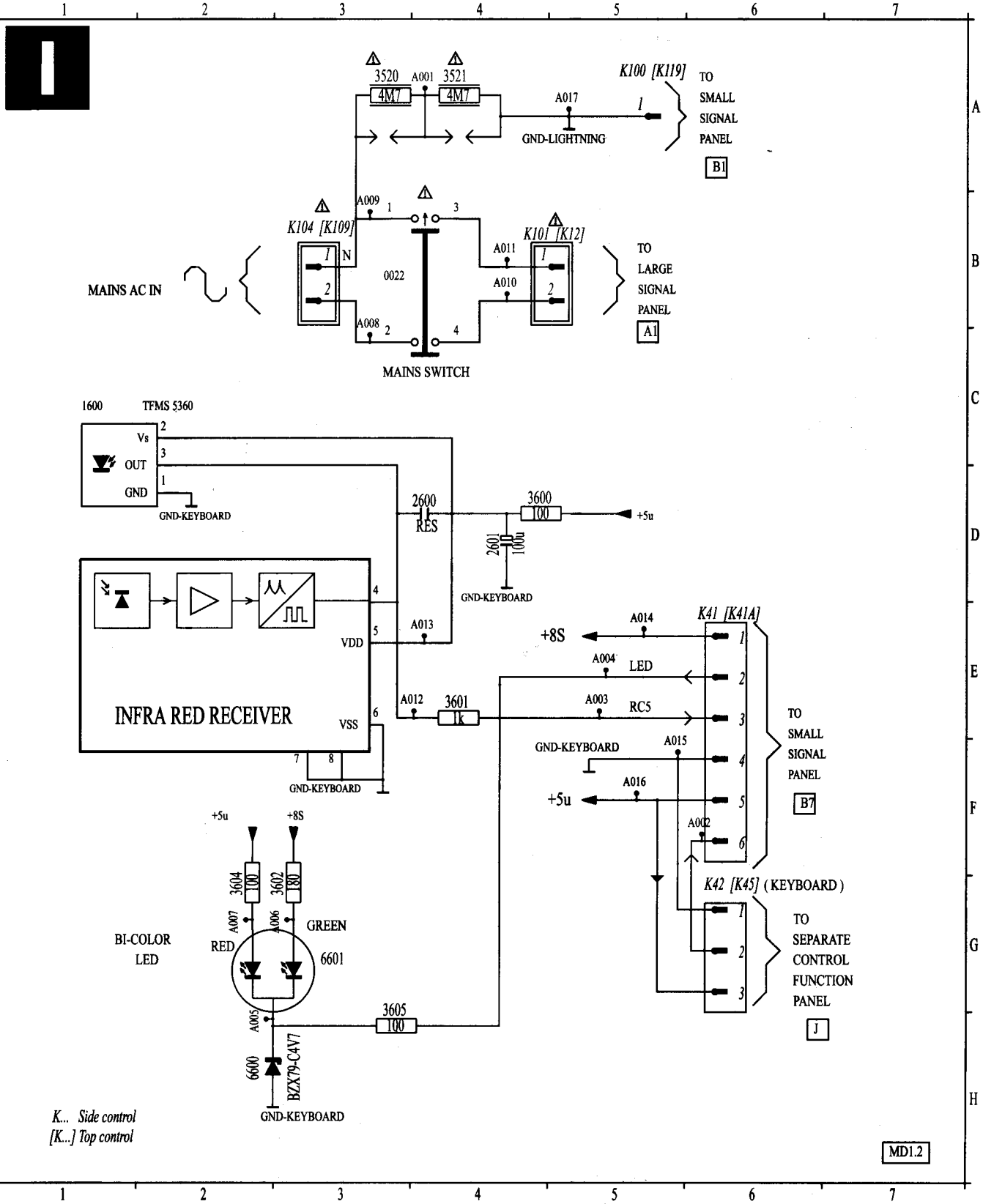
N/S panel / N/S Platine / Platine N/S

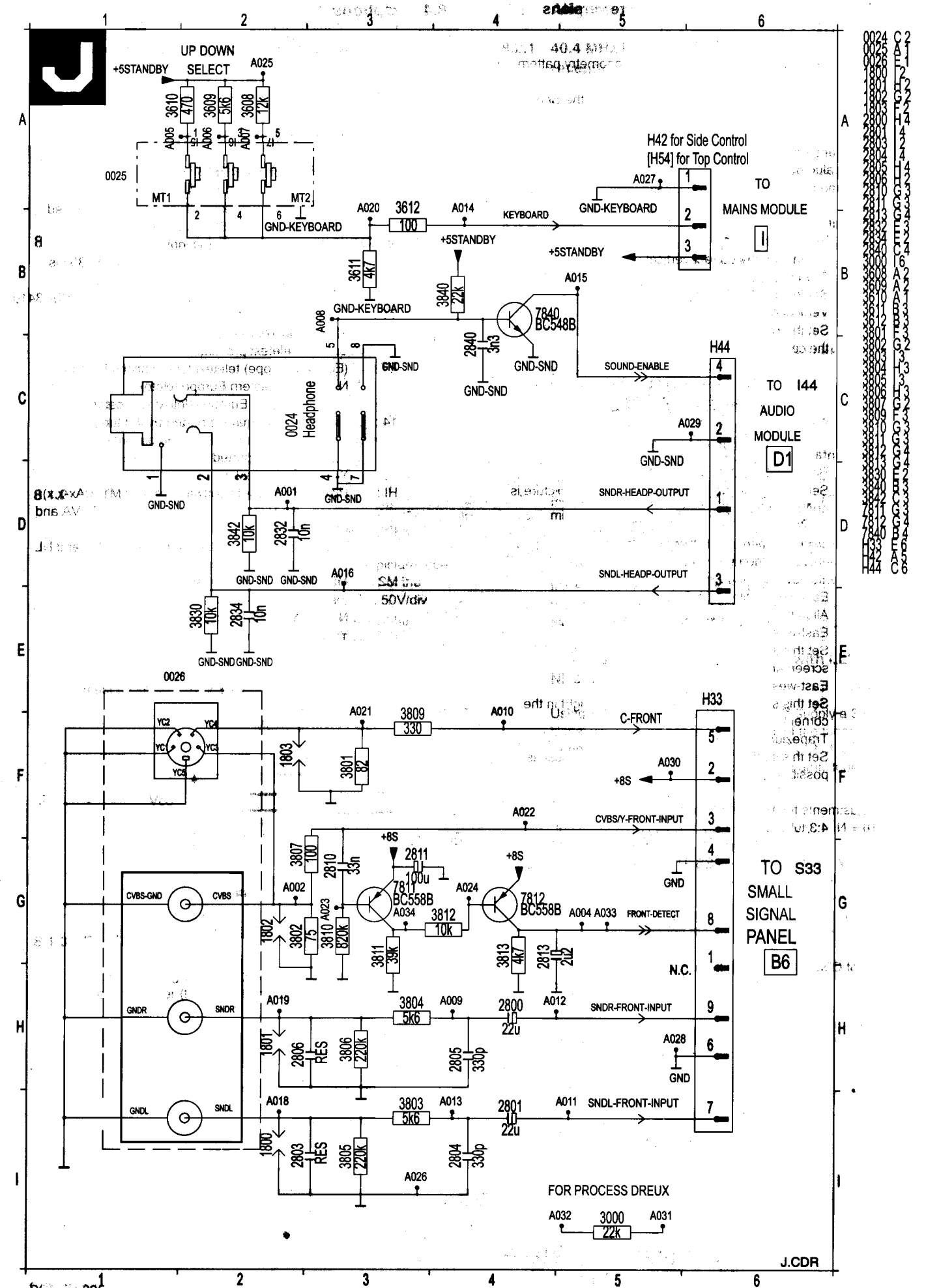
2012 E 4
2013 D 4
2018 E 5
3010 E 3
3011 E 3
3012 E 4
3013 D 4
3019 D 5
3998 E 1
5010 F 3
5011 D 3
5013 C 4
5014 C 3
6010 E 2
7010 F 5
7011 E 5
Y91 B 1
Y92 D 1





0022 B3 1600 C1 2600 D4 2601 D4
3520 A3 3521 A4 3600 D4 3601 E4
3602 G3 3604 G2 3605 H3 6600 H2
6601 G3 A001 A4 A002 F6 A003 E5
A004 E5 A005 H2 A006 G3 A007 G2
A008 B3 A009 B3 A010 B4 A011 B4
A012 E4 A013 E4 A014 E5 A015 F5
A016 F5 A017 A5 K100 A5 K101 B4
K104 B3 K41 E6 K42 G6




J
UP DOWN
+5STANDBY
SELECT
A025
3610 470
3609 5k6
3608 12k
0025
MT1
MT2
GND-KEYBOARD
A020
3612 100
A014
KEYBOARD
H42 for Side Control
[H54] for Top Control
A027
GND-KEYBOARD
TO MAINS MODULE I
+5STANDBY
3611 4k7
3840 22k
A015
7840 BC548B
A008
GND-KEYBOARD
GND-SND
2840 3n3
SOUND-ENABLE
H44
TO I44 AUDIO MODULE D1
0024 Headphone
A029
GND-SND
A001
SNDR-HEADP-OUTPUT
3842 10k
2832 10n
A016
SNDL-HEADP-OUTPUT
3830 10K
2834 10n
0026
YC2
YC4
YC1
YC3
YC5
A021
3809 330
A010
C-FRONT
H33
1803
3801 82
A030
+8S
A022
CVBS/Y-FRONT-INPUT
3807 100
2810 33n
+8S
2811 100u
7811 BC558B
A034
3812 10k
7812 BC558B
A024
A004 A033
FRONT-DETECT
GND
TO S33 SMALL SIGNAL PANEL B6
CVBS-GND
CVBS
A002
A023
1802
3802 75
3810 820k
3811 39K
3813 4k7
2813 22u
N.C.
GNDR
SNDR
A019
3804 5k6
A009
2800 22u
A012
SNDR-FRONT-INPUT
1801
2806 RES
3806 220k
2805 330p
A028
GND
GNDL
SNDL
A018
3803 5k6
A013
2801 22u
A011
SNDL-FRONT-INPUT
1800
2803 RES
3805 220k
2804 330p
A026
FOR PROCESS DREUX
A032
3000 22k
A031
J.CDR

8.3.2 Geometry adjustments (for software versions M12COx-3.x and M12BAx-x.x)

Connect a pattern generator and select a geometry pattern (signal at 475.25 MHz)

- Switch to the Service Default Mode, then to the Service Alignment Mode.
- Select the desired alignment with the ↑ / ↓ keys.
- Change the selected alignment with the ← / → keys.
- A value between 0 and 63 can be selected.
- Changed values are stored immediately.

Vertical

VP : Vertical Shift
Set this for the correct vertical position.

VA : Picture height
Set this for the correct picture height.

VL : Vertical linearity
Set this so that the vertical centre of the picture is at the centre of the tube.

VS : Vertical S-correction
Set this so that the height of the squares in the top of the picture equal the height in the bottom of the picture.

Horizontal

HD : Horizontal shift.
Set this so that the horizontal centre of the picture is on the centre of the tube.

For sets with a screen size larger than 21", the following alignments can be done as well. For 21" sets these alignments have no function.

HW : East-west width
Align the picture width with this.

HP : East-west parabola correction
Set this so that the vertical lines at the sides of the screen are straight.

HC : East-west corner-correction.
Set this so that the vertical lines are straight in the corners.

HT : Trapezium correction
Set this so that the vertical lines are as vertical as possible.

Adjustments for 16:9 sets (reserved)

16 = N 4:3 tube (options SS, D1, D2, D3 and D4 not available (blue))

16 = Y 16:9 tube (options SS, D1, D2, D3 and D4 available)

8.4 Options

E2 : Number of Euro/Scart connectors (options N or Y)
- N 1 Euro/Scart connector present
- Y 2 Euro/Scart connectors present

UO : Tuner type
- N UHF/VHF tuner (item 1000 is UV916S)
- Y UHF tuner (item 1000 is UV944S). Used in the United Kingdom (/05 sets)

LL : Nicam L (options N or Y)
- N Nicam L not present
- Y Nicam L present (Nicam L panel required and item 7353 is MSP3410)

NI : Nicam (stereo) sound (options N or Y)
- N Only 2CS stereo, no Nicam (item 7353 is MSP3400)
- Y 2CS and Nicam stereo (item 7353 is MSP3410)

TT : Teletext (options N or Y)
- N No Teletext present
- Y Teletext present

ET : (Eastern Europe) teletext type (options N or Y)
- N No Eastern Europe teletext
- Y Eastern Europe teletext (/58 sets)

14 : 14:9 Picture format supported by 4:3 tube (options N or Y)
- N Not supported
- Y Supported

HI : Histogram (not with software version M12BAx-x.x)
- N No Histogram present (options VG, VA and NL not available (blue))
- Y Histogram present (options VG, VA and NL available)

M2 : MD1.1E or MD1.2E chassis (only with software version M12BAx-x.x)
- N MD1.1E chassis
- Y MD1.2E chassis

8. Electrical alignments

General: the Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 6.

Alignment conditions:
All electrical adjustments should be performed under the following conditions:
- Power supply voltage: 240V ± 10%, 50Hz ± 5%.
- Warm-up time: ≈ 10 minutes
- The voltages and oscillograms are measured in relation to the tuner earth.
- Test probe: Ri > 10MΩ; Ci < 2,5 pF.

8.1 Adjustments on the large signal panel

8.1.1 95V/140V supply voltage

For 21" TV-sets
Connect a voltmeter to the cathode of D6567.
With the aid of R3532 adjust the power supply voltage to 95V ± 0,5V.

For sets 21"
Connect a voltmeter to the cathode of D6567.
With the aid of R3559 adjust the power supply voltage to 140V ± 1V.

8.1.2 VG2 adjustment

Connect a pattern generator displaying a full black picture. Switch the TV-set to the service default mode (see chapter 6). Connect an oscilloscope to the picture tube cathodes for red, green and blue (pins 6, 8 en 11 of the picture tube socket). Set the oscilloscope to DC, 50V/div and 2 ms/div. Measure the DC level of the measuring pulses at the end of the frameblanking (see fig. 8.1). Using the Vg2 potentiometer on the linetransformer (bottom potentiometer) the measuringpulse with the highest level must be set to +160V ± 2V.

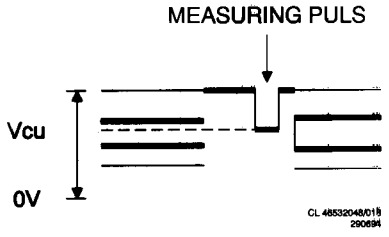


Figure 8.1

8.1.3 Focusing

Is aligned using the focuspotentiometer on the linetransformer (top potentiometer).

8.2 Alignments on the small signal panel

8.2.1 40.4 MHz IF filter (only for sets with SECAM LL' reception)

Using a signal generator (e.g. PM5326) and a capacitor of 5,6 pF supply a 40,4 MHz signal to pin 17 of the tuner. Connect an oscilloscope to pin 1 of filter 1016. Switch on the set and select in the installation menu MANUAL; SYSTEM EUR.W. Align coil L5117 for maximum DC output voltage.

8.2.2 AFC

Switch the set to service default mode (see chapter 8). Using a pattern generator (e.g. PM5518) supply a signal on a frequency of 475,25 MHz
Align coil L5114 for optimal picture quality.

8.2.3 Picture demodulator (only for sets with SECAM LL' reception)

Using a signal generator (e.g. PM5326) supply a 32.95MHz signal via a 5,6 pF capacitor to pin 17 of the tuner.
Align the signal level of the generator so that the DC-voltage on pin 5 of the tuner is 5V.
Switch on the set and select in the installation menu MANUAL; SYSTEM FRANCE. Align capacitor C2106 for minimal voltage on pin 5 of the tuner.

8.2.4 RF-AGC

If the signal of a strong local transmitter is distorted, align the value for AX (AGC crossover) in the service menu (see chapter 8) until the picture is no longer distorted.

8.2.5 Audio demodulator (Not for sets with LL' and NICAM reception possibility)

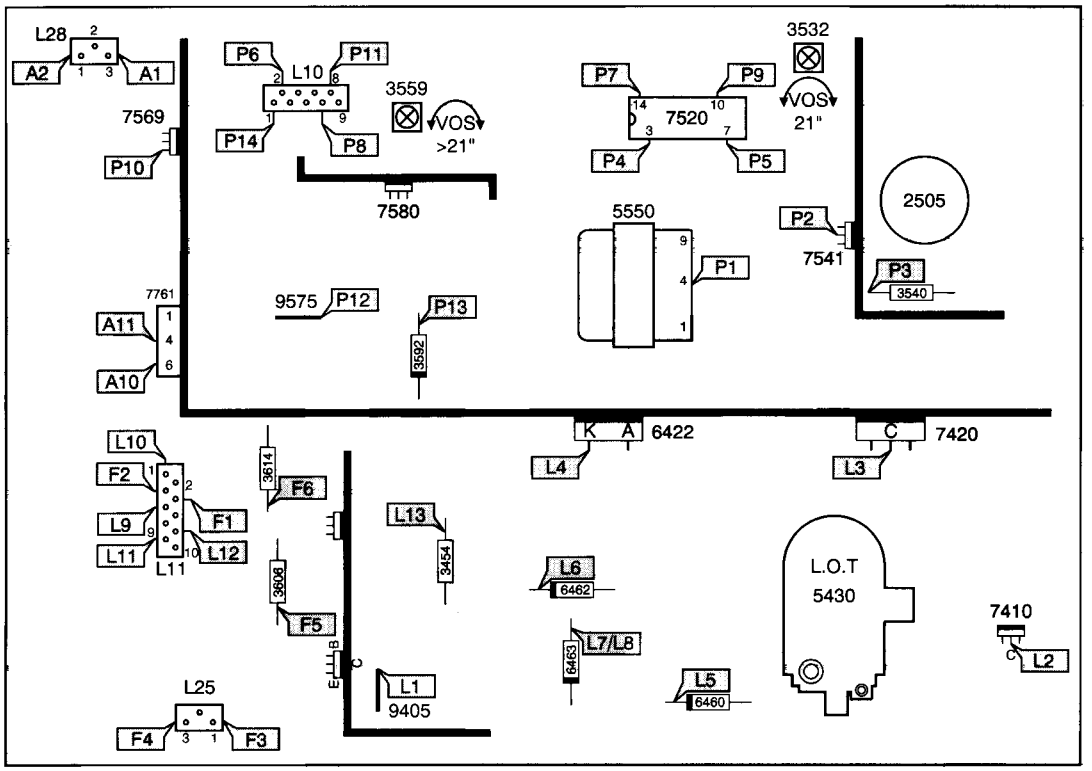
Using a signal generator (e.g. PM5326) supply a 38.9MHz signal via a 5,6 pF capacitor to pin 17 of the tuner.
Connect an oscilloscope (2ms/div) to pin 12 of IC7033 (TDA3845). Align coil L5030 for minimal amplitude.

8.3 Picture tube alignments

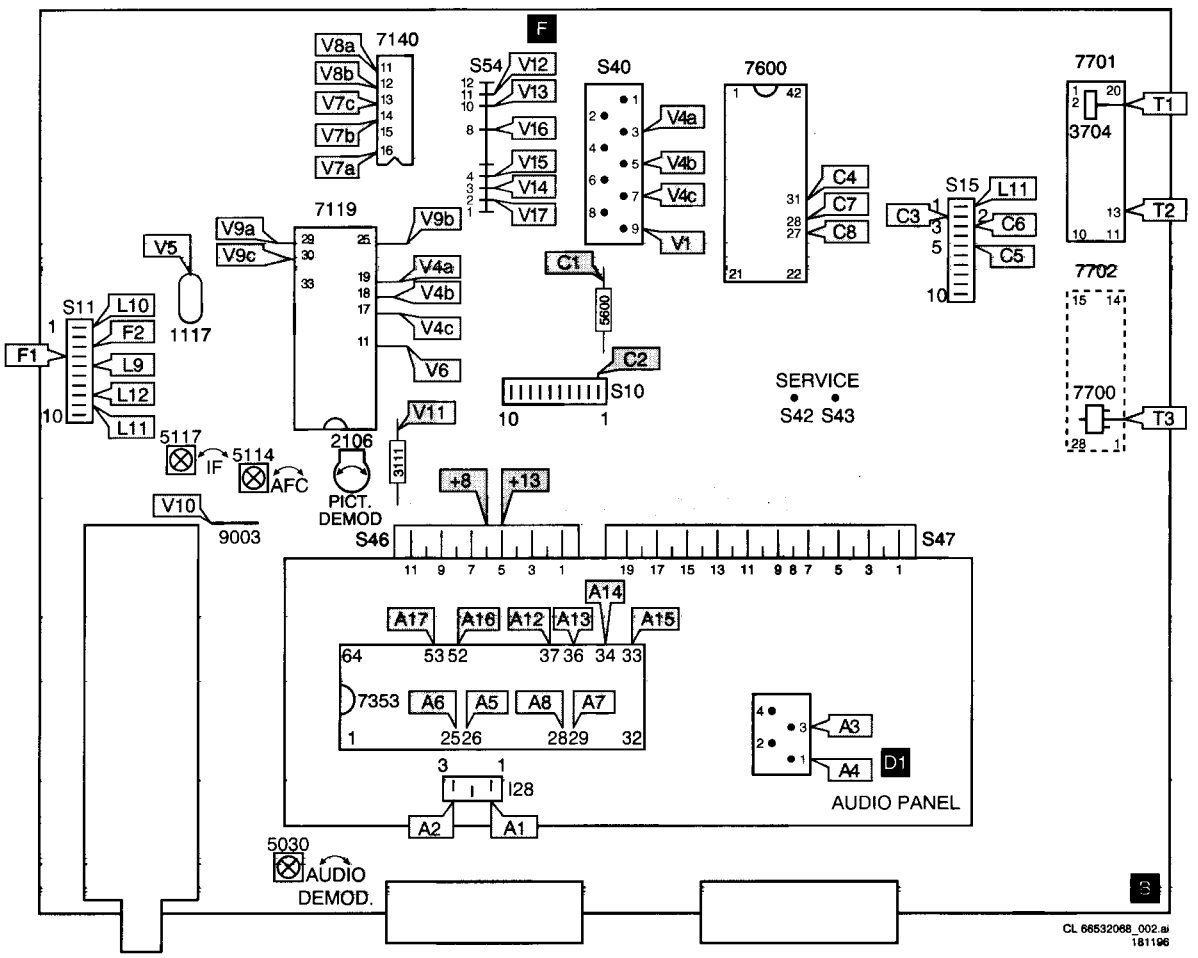
8.3.1 Whitebalance

Connect a pattern generator and select a white picture. Set contrast to maximum (63) for 21" or to 40 for 21" tv-sets. Use the ↑ / ↓ keys to select an alignment and the ← / → keys to change the value. Set GD to 50, RD to 57 and BD to 45.
If necessary change the settings for RD and BD for a correct white balance.

Large signal panel / Groß-Signal Platine / Platine forts signaux



Small signal panel / Klein-Signal Platine / Platine petits signaux



11. List of abbreviations

AC	Alternating Current
AF_AMP	Audio frequency amplifier
AGC	Automatic gain control
AM	Amplitude modulation
ATS	Automatic Tuning System
AQUADAG	Earth from the CRT
AUD_TERR_AM	Audio (AM) from the antenna
AUD1_TERR_AM	Audio (AM) from the antenna
AUDIO L	Audio left
AUDIO R	Audio right
AUDIO_L	Left to DBE module
AUDIO_R	Right to DBE module
B	Blue signal to CRT panel
B_IN	Blue signal input
BC_INFO	Beam current information
B_SC_INPUT	Blue input from Euro connector
B_TXT	Blue Teletext signal
(B-Y) IN	B-Y input signal
(B-Y) OUT	Colour difference signal out
BC_INFO	Black current info from CRT panel
BG DK STEREO	System PAL BG DK; stereo sound
BG LI NICAM	System PAL BGI; NICAM sound
BG LI STEREO	The stereo signal from PAL BGI or SECAM L
BG_ST/NIC	System BG stereo with NICAM sound
Bk	Burst key pulse
BLANK	Blanking signal
BLK	Black stretch
BLKSTR	Black stretch
BLS	Black line S
BLKSCREEN	Blank screen, signal from the microcomputer
BM	Black matrix
B_OSD	Blue on screen display signal
C_AFU	Centre signal to module
C_FILTER	Chrominance filter
C_FRONT	Chrominance signal from separate controls panel
C_INPUT	Chrominance from Euro connector 2
CRT	Cathode ray tube
CRT..	Indicator for different CRT types
CTI	Colour transient improvement
CURR.SENZE	Current sense to detect current
CUT_OFF	Signal to align the black level of the RGB signals
CVBS	Composite Video Blanking Synchronisation
CVBS/Y_FRONT	CVBS or luminance from separate controls
CVBS/Y_SC2/FRONT_INPUT	CVBS/luminance signal from Euro connector/front input
CVBS_COMB/TXT	CVBS signal to teletext
CVBS_SC1_INPUT	CVBS signal from Euro connector 1
CVBS_SC2	CVBS signal from Euro connector 2
CVBS_SC2_OUT	CVBS outgoing signal from Euro connector 2
CVBS_SECAM	CVBS signal to SECAM IC
CVBS_TERR	CVBS from the antenna
CVBS_TERR/SAT	CVBS Signal from antenna or from satellite
CVBS_TXT	CVBS to Teletext
CVBS_SAT	CVBS signal from satellite tuner
D/A	Digital to analogue converter
DACA_L	Left output signal from DFP to headphone (independent volume controlled)
DACA_R	Right output signal from DFP to headphone (independent volume controlled)
DACAM_L	Left output signal from DFP to loudspeaker
DACAM_R	Right output signal from DFP to loudspeaker
DC	Direct Current
DEGAUSS	Degaussing
DELAY	Luminance delay
DET	Detector
DFP	Digital Sound Processor
DEMOD	Demodulator

EAR1	Earth 1 (ground)
EARTH	Earth (ground)
EAST EU	East Europe
EHT	Extra high tension
EHTINFO	Voltage related to beam current
EHTINFO1	Voltage related to beam current to CRT panel
EW	East-west
EW_COMP	East-west compensation
EWD	East-west drive
FBL_IN	Fast blanking in
FBL_OFF	Fast blanking off
FBL_PRESENT	From Euro connector, detects if there is a full page RGB at the Euro connector or OSD or a MENU from an external source
FILA_CRT	Filament for the CRT
FM	Frequency modulation
FOLDB	Foldback
FRAMEDEFL_R	Frame deflection right signal
FRONT_DETECT	Signal to detect if on separate controls panel video signals are present
FRONT_INPUT	Input from separate controls panel at front side of the TV set
G_IN	Green signal in
G_OSD	Green (on screen display) signal
G_SC_INPUT	Green input from Euro connector
G_TXT	Green Teletext signal
G-Y	Colour difference signal
G_Y MATRIX	RGB luminance matrix
GND..	Ground ..
GND_AUDIO	Ground
GND_KEYBOARD	Ground of keyboard
GND_LIGHTNING	Ground on mains module
GND_LINE_SS	Ground from SS-panel for line drive
GND_SOUND_SUPPLY	Ground to the audio amplifier
GND_VO	Ground to the deflection
GNDB	Ground B
GNDD	Ground D
G/V	Green signal to CRT panel
H	Horizontal pulse
HDRIVE	Horizontal drive signal
HEATER	Output voltage to the tube heater
HFBL	Feedback from line deflection
HPULSE	From deflection module, horizontal pulse for OSD synchronisation
HIST	Histogram
I/BG	To Sound module, selects the audio system
IDENT	Identification
I NICAM	System NICAM/PAL I
IF	Intermediate-frequency
INT/EXT	Internal or external switching
IRQ	From the Satellite or Teletext module, interrupt signal from these modules
ITT	Type indication Sound module
I²C	Inter IC bus
I/O	Input/Output
LED	Light emitting diode
LF	Low frequency
L/L	To BIMOS module and Sound module, switches between the L and L' system
LINEDEFL_CS	Connection for geometry correction panels
LINEDEFL_LIN	Connection for geometry correction panels
LOT	Line output transformer
NC	Not connected
NICAM	Near Instantaneous Compending Audio Multiplex (digital sound system)
NICAM L	System L-NICAM
NO NORDIC	Not used in set for Nordic countries
NTSCM/BG	Switching signal
OK	Correct
OSC	Oscillator

List of abbreviations

PAL	Phase Alternating Line (colour system)
P_GND	Audio power ground
PHASE COMP	Phase compensation
PLL	Phase lock loop
POR	Power-on reset
PROT	Protection
R	Red signal to CRT panel
RC5	Remote Control signal
R-IN	Red input signal
(R-Y)IN	Colour difference (R-Y) input signal
R_OSD	Red (on screen display) signal
R_SC_INPUT	Red input from Euro connector
R_TXT	Red Teletext
R_Y OUT	Colour difference signal out
RGB	Red Green Blue
SAND	Sand castle
SAND1	Sand castle signal to Scan module
SBUS	Sound bus
SCART_L	Sound signal L from Euro connector
SCART_R	Sound signal R from Euro connector
SAT	Satellite
SCL	I²C Clock signal
SCLI	Serial clock pulse
SDA	I²C data
SDAa	To every other module, serial data
SDAI	Serial data pulse
SECAM	SEquentiel Coleur A Memoire (colour system)
SECAM L	System L-SECAM
SELECT	Selection signal for Euroconnectors or separate controls
SEP CTRL	Separate controls
SF	Super flat
SIF	Sound IF
SIF_SAT	Sound IF from satellite tuner
SNDL	Sound left,
SNDL_CL_OUTPUT	Left sound to CL output from sound module
SNDL_FRONT	Left sound signal from separate controls panel
SND_HEADP_OUTPUT	Output sound left to the headphone connector
SNDL_SC1_INPUT	Left sound output signal from the audio module
SNDL_SC1_OUTPUT	Output signal, sound left to Euro connector 1
SNDL_SC2_/FRONT_INPUT	Input signal sound L from Euro connector 2 or front input
SNDL_SC2_OUTPUT	Output signal sound L to Euro connector 2
SNDL__SPEAKER	Sound L signal to loudspeaker
SNDR	Sound right
SNDR_CL/VL_OUTPUT	Right CL/VL audio signal from Dolby
SNDR_CL_OUTPUT	Sound right, constant level output to rear cinches
SNDR_FRONT	Sound right from separate controls panel
SNDR_HEADP_OUTPUT	Output sound right to the headphone connector
SNDR_SC1_INPUT	Input signal, sound right to Euro connector 1
SNDR_SC1_OUTPUT	Output signal sound R to Euro connector 1
SNDR_SC2_OUTPUT	Right sound to Euro connector 2 output from sound module
SNDR+_SPEAKER	Sound R signal to loudspeaker
SNDR_SUBW	Sound R signal to subwoofer
SOUND_ENABLE	To the Audio Amplifier module, switches on and off the amplifier
SOUND_SUP	Supply voltage of amplifier
STANDBY	To supply module, switches the set in and out of standby
STATUS1	Status signal from Euro connector input to control module
STATUS2	Status signal from Euro connector 2 input to control module
STD..	Indicator for different standards
SVHS	Super VHS
SYNC	Synchronisation signal
SYNC_TXT	Synchronisation signal from Teletext
SYS	System switching signal
SYS..	Indicator for different systems
1SC	One carrier sound
2SC	Two carrier sound

TCLK	Teletext clock signal
TDATA	Teletext data signal
TUNING	Tuning voltage
TUN	Indicator for different tuners
VDRIVE	Vertical drive
VDRIVE+/VD	Vertical drive positive side
V0S	140 Volt (95 Volt for 21")
VFRAME (+ or -)	Positive or negative supply voltage for frame amplifier
VG1_CRT	VG1 input to the picture tube
VG2	G2 input to the picture tube
VIF	Video intermediate frequency
VDD	Supply voltage
V0D	Voltage used in horizontal output stage
V0D1	Voltage used in horizontal output stage
V0LOT	Voltage to line output transformer
V0CONN	Voltage to Scan module
VP	Video processor
VPROT	Protection voltage
VPULSE	From deflection module, vertical pulse for OSD synchronisation
VSS	Ground
VSCAVEM	Supply voltage for SCAVEM
VT	Tuning voltage
Y_COMB	Y (or CVBS) signal to TDA8366
Y_FRONT	Luminance signal from separate controls panel
Y_OUT	Luminance signal out
YUV_ON/OFF	To Histogram/black stretch module, switch on & off
UPR	Indicator for different control systems
WEST-EU	West Europe
21" EUR	21" Europe
+	Present, in diversity tables
-	Not present in diversity tables

Spare parts list / Stükliste / Liste des pièces

3889	4822 051 20224	220k 5% 0.1W

5030	4822 157 63068	0.28µH
5031	4822 156 21719	1.5µH 5%
5037	4822 157 53139	4.7µH
5100	4822 157 60123	6.8µH
5105	4822 157 60119	1.2µH (BG/BGI)
5105	4822 157 63065	0.68µH (BGLI)
5106▲	4822 157 51462	10µH
5114	4822 157 63068	0.28µH
5117	4822 157 53539	0.27µH 5%
5600	4822 157 51216	5.6µH
5601	4822 157 70826	2.4µH
5614	4822 157 53066	15µH 10%
5652	4822 157 71853	27U 5%
5702	4822 157 51216	5.6µH
5703	4822 157 51216	5.6µH

6003	4822 130 34142	BZX79-C33
6030▲	4822 130 30621	1N4148
6031▲	4822 130 30621	1N4148
6032▲	4822 130 30621	1N4148
6105▲	4822 130 30621	1N4148
6106▲	4822 130 30621	1N4148
6107▲	4822 130 30621	1N4148
6108▲	4822 130 30621	1N4148
6109▲	4822 130 30621	1N4148
6111	4822 130 34233	BZX79-F5V1
6660▲	4822 130 30621	1N4148
6661▲	4822 130 30621	1N4148
6700▲	4822 130 30621	1N4148
6800	4822 130 34379	BZX79-C27
6801	4822 130 34379	BZX79-C27
6830▲	4822 130 31983	BAT85
6835	4822 130 34379	BZX79-C27
6836	4822 130 34379	BZX79-C27
6840	4822 130 34379	BZX79-C27
6841	4822 130 34379	BZX79-C27
6850	4822 130 34379	BZX79-C27

7009▲	5322 130 41982	BC848B
7010▲	5322 130 41982	BC848B
7030▲	5322 130 41982	BC848B
7031▲	5322 130 41982	BC848B
7032▲	5322 130 41982	BC848B
7033	4822 209 81878	TDA2545A/V4
7100▲	5322 130 41982	BC848B
7102▲	5322 130 41982	BC848B
7104	5322 209 10576	HEF4053BP
7105	5322 130 42136	BC848C
7106	5322 130 41983	BC858B
7108	5322 130 42136	BC848C
7109	5322 130 42136	BC848C
7110	5322 130 42136	BC848C
7113	4822 209 90129	TDA8395P/N2
7119	4822 209 14927	TDA8366/N4
7120▲	5322 130 41982	BC848B
7140	4822 209 12635	TDA4665/V4
7150▲	5322 130 41982	BC848B
7600	4822 900 10964	µP M12CO1-4.0
7600	4822 900 10971	µP M12CO2-4.0
7600	See also Product Survey	
7601▲	5322 130 41982	BC848B
7604▲	5322 130 41982	BC848B
7605▲	5322 130 41982	BC848B
7608▲	5322 130 41982	BC848B
7610	5322 130 42136	BC848C
7660	5322 130 42136	BC848C
7685	4822 209 14928	ST24W16B6
7693	5322 130 41983	BC858B
7700▲	5322 130 41982	BC848B
7701	4822 209 90963	CF72416
7702	4822 209 14889	CF70200E
7702	4822 209 90964	CF70203NW
7805	4822 130 40937	BC548B
7826▲	5322 130 41982	BC848B
7830	5322 130 42136	BC848C
7850▲	5322 130 41982	BC848B
7851	5322 130 41983	BC858B
7867▲	5322 130 41982	BC848B
7875	5322 209 10576	HEF4053BP

CRT PANEL [C]

Various

1065	4822 212 10953	CRT 21" BM
1065	4822 212 10922	CRT 25/29" SF
	4822 265 10742	7P conn. R24
	4822 265 41451	9P conn. R40
▲	4822 255 70261	Socket Pict. tube

2300	4822 122 33216	270pF 5% 50V
2300	4822 122 33575	220pF 5% 50V
2320▲	4822 122 33172	390pF 5% 50V
2320	4822 122 33216	270pF 5% 50V
2321	4822 121 41545	0.033µF 10% 250V
2340	4822 122 33216	270pF 5% 50V
2340	4822 122 33575	220pF 5% 50V
2360	4822 124 81029	100µF 20% 25V
2381	4822 121 70642	6.8nF 1600V
2383▲	4822 124 40433	47µF 20% 25V
2391	5322 122 32452	47pF 5% 63V

3129	4822 050 13904	390k 1% 0.4W
3129	4822 116 52245	150k 5% 0.5W
3132	4822 116 83874	220k 5% 0.5W
3300	4822 053 12103	10k 5% 3W
3301	4822 111 30991	680Ω 10%
3302	4822 116 83872	220Ω 5% 0.5W
3303	4822 116 52199	68Ω 5% 0.5W
3304	4822 116 52195	47Ω 5% 0.5W
3305	4822 116 52219	330Ω 5% 0.5W
3307	4822 116 52224	470Ω 5% 0.5W
3309▲	4822 052 10102	1k 5% 0.33W
3310	4822 116 52244	15k 5% 0.5W
3311	4822 116 52289	5k6 5% 0.5W
3311	4822 116 52303	8k2 5% 0.5W
3312	4822 116 52289	5k6 5% 0.5W
3320	4822 053 12103	10k 5% 3W
3321	4822 111 30991	680Ω 10%
3322	4822 116 52213	180Ω 5% 0.5W
3322	4822 116 83872	220Ω 5% 0.5W
3323	4822 116 52199	68Ω 5% 0.5W
3324	4822 116 52195	47Ω 5% 0.5W
3325	4822 116 52219	330Ω 5% 0.5W
3326	4822 116 52224	470Ω 5% 0.5W
3329▲	4822 052 10102	1k 5% 0.33W
3340	4822 053 12103	10k 5% 3W
3341	4822 111 30991	680Ω 10%
3342	4822 116 52213	180Ω 5% 0.5W
3342	4822 116 83872	220Ω 5% 0.5W
3343	4822 116 52199	68Ω 5% 0.5W
3344	4822 116 52195	47Ω 5% 0.5W
3345	4822 116 52219	330Ω 5% 0.5W
3348	4822 116 52224	470Ω 5% 0.5W
3349▲	4822 052 10102	1k 5% 0.33W
3350	4822 051 20683	68k 5% 0.1W
3351	4822 116 52231	820Ω 5% 0.5W
3352	4822 116 52231	820Ω 5% 0.5W
3354	4822 051 20399	39Ω 5% 0.1W
3354	4822 051 20478	4Ω7 5% 0.1W
3355▲	4822 051 20109	10Ω 5% 0.1W
3355	4822 051 20159	15Ω 5% 0.1W
3356	4822 051 20689	68Ω 5% 0.1W
3356▲	4822 051 20008	0Ω (jumper)
3361	4822 051 20392	3k9 5% 0.1W
3370	4822 051 20399	39Ω 5% 0.1W
3381	4822 111 30991	680Ω 10%
3382	4822 117 11896	1k5 20% 0.5W
3385	4822 051 10102	1k 2% 0.25W
3386▲	4822 052 10128	1Ω2 5% 0.33W
3387▲	4822 052 10109	10Ω 5% 0.33W
3388▲	4822 052 10689	68Ω 5% 0.33W
3390	4822 051 10102	1k 2% 0.25W
3391▲	4822 051 20008	0Ω (jumper)
3392	4822 053 20825	8.2M 5% 0.25W
3396	4822 116 52224	470Ω 5% 0.5W
3397	4822 116 52224	470Ω 5% 0.5W
3398	4822 116 52224	470Ω 5% 0.5W
3399	4822 051 20399	39Ω 5% 0.1W
3399	4822 051 20478	4Ω7 5% 0.1W

5381	4822 156 20915	33µH

6344▲	4822 130 30621	1N4148
6360	4822 130 81424	BZV86-2V0

7300	4822 130 41773	BF869
7301▲	5322 130 41982	BC848B
7302	4822 130 41646	BF423
7303	4822 130 41782	BF422
7320	4822 130 41773	BF869
7321▲	5322 130 41982	BC848B
7322	4822 130 41646	BF423
7323	4822 130 41782	BF422
7340▲	5322 130 41982	BC848B
7341	4822 130 41773	BF869
7342	4822 130 41646	BF423
7343	4822 130 41782	BF422
7365▲	5322 130 41982	BC848B

AUDIO MODULE [D1]

Various

	4822 212 10917	Audio Mod. non-Nicam
	4822 212 10918	Audio Mod. Nicam
	4822 265 31247	3P conn. I28
	4822 265 31245	4P conn. I44
	4822 265 10419	12P conn. I46
	4822 265 10421	19P conn. I47
1350	4822 242 10434	18,432MHz

2340	4822 126 13473	220nF 20% 50V
2341	4822 126 13473	220nF 20% 50V
2342	4822 126 13473	220nF 20% 50V
2343	4822 126 13473	220nF 20% 50V
2352▲	4822 124 41579	10µF 20% 50V
2353▲	4822 124 41579	10µF 20% 50V
2354▲	4822 124 41579	10µF 20% 50V
2355▲	4822 124 41579	10µF 20% 50V
2356▲	4822 124 41579	10µF 20% 50V
2357▲	4822 124 41579	10µF 20% 50V
2358▲	4822 124 41579	10µF 20% 50V
2359▲	4822 124 41579	10µF 20% 50V
2360▲	4822 124 41579	10µF 20% 50V
2361▲	4822 124 41579	10µF 20% 50V
2362▲	4822 124 41579	10µF 20% 50V
2363▲	4822 124 41579	10µF 20% 50V
2364	4822 124 40769	4.7µF 20% 100V
2365▲	4822 124 41579	10µF 20% 50V
2366	4822 124 40255	100µF 20% 63V
2367▲	4822 124 41579	10µF 20% 50V
2368▲	4822 124 41579	10µF 20% 50V
2369	4822 121 51252	470nF 5% 63V
2370	4822 121 51252	470nF 5% 63V
2372	4822 126 13805	68nF 10 16V
2373▲	5322 126 10223	4.7nF 10% 63V
2374	5322 126 10794	220pF 5% 63V
2375	5322 122 34099	470pF 10% 63V
2376	5322 122 32531	100pF 5% 50V
2377	4822 126 13805	68nF 10 16V
2378▲	5322 126 10223	4.7nF 10% 63V
2379	5322 126 10794	220pF 5% 63V
2380	5322 122 34099	470pF 10% 63V
2381	5322 122 32531	100pF 5% 50V
2382▲	5322 122 34123	1nF 10% 50V
2383▲	5322 122 34123	1nF 10% 50V
2384	4822 121 51252	470nF 5% 63V
2385	4822 121 51252	470nF 5% 63V
2386▲	5322 122 34123	1nF 10% 50V
2387▲	5322 122 34123	1nF 10% 50V
2388▲	5322 122 34123	1nF 10% 50V
2389▲	5322 122 34123	1nF 10% 50V
2390▲	5322 122 34123	1nF 10% 50V
2392	5322 122 32286	3.3pF 5% 50V
2393	5322 122 32286	3.3pF 5% 50V
2394▲	4822 126 10002	100nF 20% 25V
2395▲	5322 122 34123	1nF 10% 50V
2396▲	4822 122 33172	390pF 5% 50V
2397▲	4822 122 33172	390pF 5% 50V
2398▲	4822 126 10002	100nF 20% 25V
2400	5322 122 32452	47pF 5% 63V
2401▲	4822 126 10002	100nF 20% 25V
2402	5322 122 32268	470pF 10% 50V
2403	5322 122 32268	470pF 10% 50V
2404	4822 121 51252	470nF 5% 63V
2405	5322 122 32658	22pF 5% 50V
2408▲	4822 126 10002	100nF 20% 25V
2413	4822 124 41596	22µF 20% 50V
2415	4822 124 41596	22µF 20% 50V
2422	4822 124 41584	100µF 20% 10V
2425	4822 124 41596	22µF 20% 50V
2427	4822 124 41596	22µF 20% 50V
2432	4822 124 41584	100µF 20% 10V
2436	5322 126 10511	1nF 5% 50V
2437	5322 126 10511	1nF 5% 50V
2438	5322 126 10511	1nF 5% 50V
2448	5322 126 10511	1nF 5% 50V
2449	5322 126 10511	1nF 5% 50V
2450	5322 122 31946	27pF 5% 63V
2452▲	5322 126 10223	4.7nF 10% 63V
2453▲	5322 126 10223	4.7nF 10% 63V
2454▲	5322 126 10223	4.7nF 10% 63V
2455▲	5322 126 10223	4.7nF 10% 63V

3356	4822 051 20331	330Ω 5% 0.1W
3357	4822 051 20122	1k2 5% 0.1W
3358	4822 051 20471	470Ω 5% 0.1W
3359	4822 051 20473	47k 5% 0.1W
3360	4822 116 52284	47k 5% 0.5W
3361	4822 116 52283	4k7 5% 0.5W
3362	4822 051 20473	47k 5% 0.1W
3363	4822 117 11449	2k2 1% 0.1W
3364▲	4822 051 20472	4k7 5% 0.1W
3365	4822 051 20473	47k 5% 0.1W
3366	4822 051 20333	33k 5% 0.1W
3367	4822 051 20473	47k 5% 0.1W
3368	4822 051 20331	330Ω 5% 0.1W
3369	4822 051 20122	1k2 5% 0.1W
3370	4822 051 20471	470Ω 5% 0.1W
3371	4822 051 20473	47k 5% 0.1W
3372	4822 116 52284	47k 5% 0.5W
3373	4822 116 52283	4k7 5% 0.5W
3374	4822 051 20473	47k 5% 0.1W
3375	4822 117 11449	2k2 1% 0.1W
3376▲	4822 051 20472	4k7 5% 0.1W
3377	4822 051 20473	47k 5% 0.1W
3378	4822 051 20333	33k 5% 0.1W
3379	4822 051 20473	47k 5% 0.1W
3380	4822 116 52175	100Ω 5% 0.5W
3381	4822 116 52175	100Ω 5% 0.5W
3382▲	4822 051 20332	3k3 5% 0.1W
3383▲	4822 051 20332	3k3 5% 0.1W
3384	4822 051 20473	47k 5% 0.1W
3385	4822 051 20334	330k 5% 0.1W
3386	4822 051 20334	330k 5% 0.1W
3387▲	4822 051 20332	3k3 5% 0.1W
3388	4822 051 20334	330k 5% 0.1W
3389▲	4822 051 20332	3k3 5% 0.1W
3390	4822 116 52272	330k 5% 0.5W
3391	4822 051 20563	56k 5% 0.1W
3391	4822 051 20822	8k2 5% 0.1W
3395▲	4822 051 20008	0Ω (jumper)
3413	4822 117 10833	10k 1% 0.1W
3414	4822 051 20822	8k2 5% 0.1W
3415	4822 051 20473	47k 5% 0.1W
3416	4822 051 10102	1k 2% 0.25W
3420	4822 051 20563	56k 5% 0.1W
3421	4822 051 20683	68k 5% 0.1W
3422	4822 116 52199	68Ω 5% 0.5W
3425	4822 117 10833	10k 1% 0.1W
3426	4822 051 20822	8k2 5% 0.1W
3427	4822 051 20473	47k 5% 0.1W
3428	4822 051 10102	1k 2% 0.25W
3430	4822 051 20563	56k 5% 0.1W
3431	4822 051 20683	68k 5% 0.1W
3432	4822 116 52199	68Ω 5% 0.5W
3433	4822 051 20331	330Ω 5% 0.1W

5350	4822 157 53139	4.7µH
5351▲	4822 157 51462	10µH
5352	4822 157 53139	4.7µH
5353	4822 157 53139	4.7µH

6384▲	4822 130 30621	1N4148
6385	4822 130 34488	BZX79-F12

7350▲	4822 209 83163	LM833N
7351▲	4822 209 83163	LM833N
7352	5322 209 10576	HEF4053BP
7353	4822 209 14894	MSP3410B-F7 (Nicam)
7353	4822 209 90562	MSP3400-TC15 (non-Nicam)
7382▲	5322 130 41982	BC848B
7383▲	5322 130 41982	BC848B
7387▲	5322 130 41982	BC848B
7389▲	5322 130 41982	BC848B
7415▲	5322 130 41982	BC848B
7420▲	5322 130 41982	BC848B
7421	5322 130 41983	BC858B
7427▲	5322 130 41982	BC848B
7430▲	5322 130 41982	BC848B
7431	5322 130 41983	BC858B
7432▲	5322 130 41982	BC848B

NICAM L MODULE [D2]

Various

	4822 212 10919	Nicam L Module
1000	4822 242 81436	OFWK3953M 38.9MHz

2000▲	5322 126 10223	4.7nF 10% 63V
2001	4822 126 13161	100nF 10% 25V
2002	4822 126 13473	220nF 20% 50V
2003	4822 126 13161	100nF 10% 25V
2006	4822 124 40763	2.2µF 100 V
2008	4822 124 40763	2.2µF 100 V
2009	4822 124 40763	2.2µF 100 V

3000	4822 051 20562	5k6 5% 0.1W
3002	4822 051 20471	470Ω 5% 0.1W
3003	4822 051 20223	22k 5% 0.1W

5001	4822 157 11014	Adj. coil

7001	4822 209 13003	TDA9811/V3
7002▲	5322 130 41982	BC848B

CTI/BS PANEL [F]

Various

	4822 212 10921	CTI/BIStr. Module
	4822 265 10419	12P F-pin conn.

2279▲	4822 124 40433	47µF 20% 25V
2280	4822 122 33575	220pF 5% 50V
2281	4822 122 33575	220pF 5% 50V
2282	4822 124 42058	33µF 20% 50V
2283	4822 124 80791	470µF 20% 16V
2284	5322 122 32531	100pF 5% 50V
2285▲	5322 122 32654	22nF 10% 63V
2286	4822 121 51319	1µF 10% 63V
2288	5322 122 32531	100pF 5% 50V
2289	5322 122 31863	330pF 5% 50V
2291	5322 121 42661	330nF 5% 63V

3276	4822 051 20272	2k7 5% 0.1W
3277	4822 051 20471	470Ω 5% 0.1W
3278▲	4822 051 20332	3k3 5% 0.1W
3279	4822 117 11449	2k2 1% 0.1W
3280	4822 051 20822	8k2 5% 0.1W
3281	4822 117 11383	12k 1% 0.1W
3282	4822 051 20334	330k 5% 0.1W
3283	4822 051 20183	18k 5% 0.1W
3284	4822 051 20271	270Ω 5% 0.1W
3285	4822 051 10102	1k 2% 0.25W
3288▲	4822 052 10399	39Ω 5% 0.33W
3289	4822 051 20271	270Ω 5% 0.1W
3290	4822 051 20122	1k2 5% 0.1W
3291	4822 051 20271	270Ω 5% 0.1W
3292▲	4822 052 10689	68Ω 5% 0.33W
3293	4822 051 20391	390Ω 5% 0.1W
3294	4822 051 20471	470Ω 5% 0.1W
3295	4822 117 11139	1k5 1% 0.1W
3296	4822 051 10102	1k 2% 0.25W
3297	4822 117 11383	12k 1% 0.1W
3298	4822 051 20333	33k 5% 0.1W

6270	4822 130 34197	BZX79-C12
6279	4822 130 80655	BZX79-F2V4

7276▲	5322 130 41982	BC848B
7277	4822 209 14895	TDA4566/V2
7280	5322 130 41983	BC858B
7281	4822 209 30711	CX20125
7282▲	5322 130 41982	BC848B
7283	5322 130 41983	BC858B

NS PANEL [G]

Various

	4822 212 10958	NS Panel

2012	4822 121 41857	10nF 5% 250V
2013	4822 121 10618	62nF 2% 63V
2018	4822 121 41857	10nF 5% 250V

3010	4822 116 80176	1Ω 5% 0.5W
3011	4822 116 80176	1Ω 5% 0.5W
3012	4822 116 52175	100Ω 5% 0.5W
3013	4822 116 52289	5k6 5% 0.5W
3019	4822 116 80176	1Ω 5% 0.5W
3998	4822 116 52175	100Ω 5% 0.5W

5010	4822 157 11017	330µH 10%
5011	4822 157 71033	NS corr. coil
5013▲	4822 142 40344	Driver transformer
5014	4822 157 62552	2.2µH

6011▲	4822 130 31631	BYV10-20

7010	4822 130 63441	FET J108
7011	4822 130 63441	FET J108

Top Control & Side IO

MAINS PANEL [I]

Various

	4822 212 10975	Mains/RC5/LED panel
0022▲	4822 276 13592	Mains switch
▲	4822 265 30389	2P conn. vert. K12
▲	4822 267 51348	2P conn. K09
	4822 265 31246	6P conn. K41A
	4822 265 10423	3P connector K45
1600	4822 212 30842	IR Rec. TFMS5360

2601	4822 124 11485	100µF 20% 16V
2604	4822 124 11486	220µF 20% 16V

3520▲	4822 053 21475	4M7 5% 0.5W
3521▲	4822 053 21475	4M7 5% 0.5W
3600	4822 116 52175	100Ω 5% 0.5W
3601	4822 116 52175	100Ω 5% 0.5W
3602	4822 116 52213	180Ω 5% 0.5W
3604	4822 116 52175	100Ω 5% 0.5W
3605	4822 116 52175	100Ω 5% 0.5W

6600	4822 130 34174	BZX79-C4V7
6601	4822 209 72895	TLUV5320 Bi.col LED

Side I/O [J]

Various

	4822 459 04021	Side IO Panel
	4822 267 31014	3.5mm headphone
	4822 256 92101	IO connections
	4822 265 41451	9P conn. H33
	4822 265 31245	4P conn. H44

2800	4822 124 41596	22µF 20% 50V
2801	4822 124 41596	22µF 20% 50V
2804	4822 122 33805	330pF 10% 63V
2805	4822 122 33805	330pF 10% 63V
2810▲	4822 122 33342	33nF 10% 63V
2811	4822 124 41643	100µF 20% 16V
2813	4822 124 41576	2.2µF 20% 50V
2832▲	4822 122 33177	10nF 20% 50V
2834▲	4822 122 33177	10nF 20% 50V

3801	4822 116 52202	82Ω 5% 0.5W
3802	4822 116 52201	75Ω 5% 0.5W
3803	4822 116 80175	4k7 5% 0.5W
3804	4822 116 80175	4k7 5% 0.5W
3805	4822 116 83874	220k 5% 0.5W
3806	4822 116 83874	220k 5% 0.5W
3807	4822 116 52175	100Ω 5% 0.5W
3808	4822 051 20101	100Ω 5% 0.1W
3809	4822 116 52219	330Ω 5% 0.5W
3810	4822 051 20824	820k 5% 0.1W
3811	4822 051 20393	39k 5% 0.1W
3813▲	4822 051 20008	0Ω (jumper)
3814▲	4822 051 20472	4k7 5% 0.1W
3830	4822 116 80173	10k 5% 0.5W
3840	4822 116 52257	22k 5% 0.5W
3842	4822 116 80173	10k 5% 0.5W
3998	4822 116 52219	330Ω 5% 0.5W
3999	4822 117 10353	150Ω 1% 0.1W

6803	4822 130 82346	LLZ-C27
6804	4822 130 82346	LLZ-C27
6805	4822 130 82346	LLZ-C27
6806	4822 130 82346	LLZ-C27

7811	5322 130 41983	BC858B
7812	5322 130 41983	BC858B
7840▲	5322 130 41982	BC848B

TOP CONTROL [J]

Various

	4822 212 10976	Top control panel
	4822 276 13396	Push button
	4822 265 10449	3P conn. H45

3630	4822 116 52238	12k 5% 0.5W
3631	4822 116 52289	5k6 5% 0.5W
3632	4822 116 52224	470Ω 5% 0.5W
3633	4822 050 24702	4k7 1% 0.6W
3634	4822 116 52175	100Ω 5% 0.5W

Side Control & IO

MAINS PANEL [I]

Various

1000	4822 212 10929	Mains/RC5/LED panel
▲	4822 276 13603	Mains switch
	4822 265 31246	6P conn. K41
	4822 265 31248	3P conn. K42
▲	4822 265 30389	2P conn. vert. K101
▲	4822 267 51348	2P conn. K104
▲	4822 256 91766	LED holder
1600	4822 130 83821	GP1U720Q IR rec.

2601	4822 124 41584	100µF 20% 10V

3520▲	4822 053 21475	4M7 5% 0.5W
3521▲	4822 053 21475	4M7 5% 0.5W
3600	4822 116 52175	100Ω 5% 0.5W
3601	4822 050 11002	1k 1% 0.4W
3602	4822 116 52213	180Ω 5% 0.5W
3604	4822 116 52175	100Ω 5% 0.5W
3605	4822 116 52175	100Ω 5% 0.5W

6600	4822 130 34174	BZX79-C4V7
6601	4822 209 72895	TLUV5320

Side Control + IO [J]

Various

1055	4822 212 10931	Side Control+IO panel
	4822 267 31014	3.5mm headphone
	4822 276 30422	Push buttons (3x)
	4822 256 92101	IO connections
	4822 265 41451	9P conn. H33
	4822 265 31248	3P conn. H42
	4822 265 31245	4P conn. H44

2800	4822 124 41596	22µF 20% 50V
2801	4822 124 41596	22µF 20% 50V
2804	4822 126 13597	330pF 10% 500V
2805	4822 126 13597	330pF 10% 500V
2810	5322 121 42489	33nF 5% 250V
2811	4822 124 81029	100µF 20% 25V
2813	4822 124 40763	2.2µF 100V
2832	4822 121 41677	10nF 10% 400V
2834	4822 121 41677	10nF 10% 400V
2840	4822 126 13599	3.3nF 10% 500V

3000	4822 116 52257	22k 5% 0.5W
3608	4822 116 52238	12k 5% 0.5W
3609	4822 116 52289	5k6 5% 0.5W
3610	4822 116 52224	470Ω 5% 0.5W
3611	4822 050 24702	4k7 1% 0.6W
3612	4822 116 52175	100Ω 5% 0.5W
3801	4822 116 52202	82Ω 5% 0.5W
3802	4822 116 52201	75Ω 5% 0.5W
3803	4822 116 52289	5k6 5% 0.5W
3804	4822 116 52289	5k6 5% 0.5W
3805	4822 116 83874	220k 5% 0.5W
3806	4822 116 83874	220k 5% 0.5W
3807	4822 116 52175	100Ω 5% 0.5W
3809	4822 116 52219	330Ω 5% 0.5W
3810	4822 116 52305	820k 5% 0.5W
3811	4822 116 83882	39k 5% 0.5W
3812	4822 116 83864	10k 5% 0.5W
3813	4822 116 52283	4k7 5% 0.5W
3830	4822 116 83864	10k 5% 0.5W
3840	4822 116 52257	22k 5% 0.5W
3842	4822 116 83864	10k 5% 0.5W

7811▲	4822 130 44197	BC558B
7812▲	4822 130 44197	BC558B
7840	4822 130 40937	BC548B

LARGE SIGNAL PANEL [A]

Various

	4822 265 41461	10P conn. L10,11,15
	4822 265 40421	6P conn. L19
	4822 265 10742	7P conn. L24
	4822 264 40207	3P conn. L25
	4822 265 31247	3P conn. L28
	4822 265 31245	4P conn. L38
▲	4822 265 30389	2P conn. L01,L02
▲	4822 256 92053	Fuse holder
▲	4822 492 62076	Spring transistor
	4822 492 70871	Spring
	4822 404 31484	LOT bracket (21")
	4822 404 31488	LOT bracket
	4822 404 31483	Heat sink bracket
1463▲	4822 252 11194	19398E1 (0,800A)
1501▲	4822 070 33152	2183.15(3.15A)
1566▲	4822 252 51175	19398E1(2,500)
1572▲	4822 071 52502	19372(2.5A)
1580▲	4822 252 51186	19398E1(2,0A)

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2400	4822 124 81257	47µF 10% 200V
2401	4822 121 42004	10nF 10% 400V
2409	4822 121 43875	47nF 5% 250V
2410	4822 121 41857	10nF 5% 250V
2411	4822 121 43875	47nF 5% 250V
2412	4822 122 31175	1nF 10% 500V
2423	4822 121 10507	470nF 5% 250V
2424	4822 124 81319	1µF 20% 160V
2425▲	4822 121 70434	11nF 5% 1.6KV
2425▲	5322 121 44345	15nF 5% 1.6KV
2426▲	4822 121 42934	27nF 10% 400V
2427	4822 121 10506	560nF 5% 250V
2427	4822 121 10507	470nF 5% 250V
2427▲	4822 121 10563	0.82µF 5% 250V
2433▲	4822 126 12274	1500pF 10% 2KV
2442	4822 124 81141	4.7µF 20% 160V
2450	4822 121 10619	220nF 10% 250V
2450▲	4822 121 40518	100nF 10% 250V
2451	4822 121 51252	470nF 5% 63V
2460	4822 126 11157	470pF 10% 500V
2461	4822 124 80791	470µF 20% 16V
2462	4822 124 80791	470µF 20% 16V
2463	4822 126 11157	470pF 10% 500V
2464	5322 124 41468	1000µF 20% 40V
2465	4822 126 11157	470pF 10% 500V
2466	4822 124 41334	470µF 20% 35V
2470	4822 126 12638	6.8nF 5% 50V
2471	4822 126 13614	4.7nF 10% 50V
2480	4822 124 40769	4.7µF 20% 100V
2481	4822 126 11157	470pF 10% 500V
2487▲	4822 124 40433	47µF 20% 25V
2500▲	4822 121 70285	470nF 10% 250V
2501	4822 121 70141	33nF 5% 400V
2504	4822 122 31175	1nF 10% 500V
2505▲	4822 124 11772	150µF 20% 385V
2505▲	4822 124 23492	220µF 50% 385V
2506▲	4822 121 40487	100nF 10% 400V
2507	4822 124 81029	100µF 20% 25V
2508	4822 121 42007	100nF 10% 100V
2511▲	4822 126 11141	2.2nF 10% 1KV
2512▲	4822 126 11141	2.2nF 10% 1KV
2520	4822 124 81029	100µF 20% 25V
2521	4822 126 13498	82pF 5% 50V
2522	4822 122 31175	1nF 10% 500V
2524	5322 121 42386	100nF 5% 63V
2525	4822 124 22263	220µF 20% 25V
2526	4822 126 11157	470pF 10% 500V
2530	4822 124 40769	4.7µF 20% 100V
2531	4822 121 43066	1nF 1% 400V
2533	4822 124 41596	22µF 20% 50V
2534	4822 122 33302	1nF 5% 50V
2535	4822 126 12451	820pF 10% 50V
2538	4822 122 33531	2.2nF 10% 50V
2540▲	4822 126 12426	330pF 10% 1KV
2542	4822 126 13595	220pF 10% 1KV
2543▲	4822 126 13451	2.2nF 10% 2KV
2544▲	4822 126 13451	2.2nF 10% 2KV
2550▲	4822 126 10727	3.3nF 20% 400V
2554	5322 121 42386	100nF 5% 63V
2557	5322 121 42489	33nF 5% 250V
2559▲	4822 124 40433	47µF 20% 25V
2561	4822 124 41458	4700µF 20% 16V
2563	4822 124 81139	2200µF 20% 16V
2565	4822 124 81029	100µF 20% 25V
2568▲	4822 126 12426	330pF 10% 1KV
2569	4822 124 81257	47µF 10% 200V
2570	4822 121 51379	82nF 5% 63V
2572	4822 122 31175	1nF 10% 500V
2573	4822 124 41663	2200µF 20% 35V
2575	4822 126 13646	120P 5% 50V
2580	4822 124 40723	2200µF 20% 16V
2581	4822 122 31175	1nF 10% 500V
2582	4822 124 81029	100µF 20% 25V
2592	4822 121 43526	47nF 5% 250V
2593	5322 121 42386	100nF 5% 63V
2602	4822 126 10334	470pF 10% 50V
2603	4822 126 13499	220pF 5% 50V
2604	4822 122 33302	1nF 5% 50V
2605	4822 122 33302	1nF 5% 50V
2606	4822 122 33302	1nF 5% 50V
2607	4822 122 33302	1nF 5% 50V
2608	4822 122 33302	1nF 5% 50V
2609▲	4822 124 40433	47µF 20% 25V
2750	4822 124 22263	220µF 20% 25V
2751	4822 124 40756	1µF 20% 100V
2751▲	4822 124 41579	10µF 20% 50V
2752	4822 124 40769	4.7µF 20% 100V
2752▲	4822 124 41579	10µF 20% 50V
2755	4822 124 41663	2200µF 20% 35V
2756	4822 124 22263	220µF 20% 25V
2760	4822 122 31175	1nF 10% 500V
2763▲	4822 124 41579	10µF 20% 50V
2764	4822 124 41596	22µF 20% 50V
2765	4822 124 80215	1000µF 20% 35V
2766	4822 124 80215	1000µF 20% 35V
2776	4822 122 31175	1nF 10% 500V
2778	4822 126 11157	470pF 10% 500V
2778	4822 126 11501	1.5nF 10% 500V
2787	4822 121 41856	22nF 5% 250V
2788	4822 121 41856	22nF 5% 250V
2789	4822 124 40756	1µF 20% 100V
2789	4822 124 40769	4.7µF 20% 100V

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3401▲	4822 052 11229	22Ω 5% 0.5W
3402▲	4822 052 11229	22Ω 5% 0.5W
3411	4822 116 52283	4k7 5% 0.5W
3414	4822 116 52176	10Ω 5% 0.5W
3415	4822 117 12517	5k6 5% 5W
3415	4822 117 12618	2k2 5% 5W
3417	4822 116 52195	47Ω 5% 0.5W
3420	4822 053 21684	680k 5% 0.5W
3421	4822 116 52283	4k7 5% 0.5W
3421	4822 116 83864	10k 5% 0.5W
3430▲	4822 052 11471	470Ω 5% 0.5W
3431	4822 116 52243	1k5 5% 0.5W
3432	4822 116 52243	1k5 5% 0.5W
3433	4822 116 52284	47k 5% 0.5W
3434	4822 116 52297	68k 5% 0.5W
3434	4822 116 83882	39k 5% 0.5W
3435	4822 116 52297	68k 5% 0.5W
3435	4822 116 83882	39k 5% 0.5W
3443▲	4822 052 10688	6Ω8 5% 0.33W
3450	4822 116 52304	82k 5% 0.5W
3450	4822 116 83882	39k 5% 0.5W
3451	4822 116 83882	39k 5% 0.5W
3452	4822 116 83882	39k 5% 0.5W
3454	4822 116 83864	10k 5% 0.5W
3455	4822 116 52272	330k 5% 0.5W
3456	4822 116 83961	6k8 5%
3457	4822 116 52244	15k 5% 0.5W
3461▲	4822 052 10228	2Ω2 5% 0.33W
3461▲	4822 052 11158	1Ω5 5% 0.5W
3462▲	4822 052 10228	2Ω2 5% 0.33W
3464▲	4822 052 11568	5Ω6 5% 0.5W
3465	4822 116 81682	2M 2 5% 0.5W
3466	4822 116 52298	680k 5% 0.5W
3466	4822 116 81783	1M 5 5% 0.5W
3467	4822 116 52235	1M 5% 0.5W
3467	4822 116 52298	680k 5% 0.5W
3470	4822 116 52278	390k 5% 0.5W
3472▲	4822 052 10228	2Ω2 5% 0.33W
3480	4822 116 52234	100k 5% 0.5W
3480	4822 116 52304	82k 5% 0.5W
3481	4822 050 11002	1k 1% 0.4W
3482	4822 116 52234	100k 5% 0.5W
3482	4822 116 52304	82k 5% 0.5W
3483▲	4822 050 24708	4Ω7 1% 0.6W
3484▲	4822 050 24708	4Ω7 1% 0.6W
3487	4822 116 52219	330Ω 5% 0.5W
3500▲	4822 116 21224	1MA/387V VDR
3502▲	4822 052 10338	3Ω3 5% 0.33W
3503	4822 111 20403	470Ω 10%
3505	4822 117 12074	7W 1Ω5 10%
3506▲	4822 117 12027	18Ω-3kΩ 25% PTC
3509	4822 116 52186	22Ω 5% 0.5W
3510	4822 116 52283	4k7 5% 0.5W
3511	4822 050 11002	1k 1% 0.4W
3512	4822 116 52243	1k5 5% 0.5W
3518	4822 116 52195	47Ω 5% 0.5W
3519	4822 116 52256	2k2 5% 0.5W
3520	4822 053 12183	18k 5% 3W
3521	4822 116 52304	82k 5% 0.5W
3522	4822 116 52219	330Ω 5% 0.5W
3523	4822 116 52244	15k 5% 0.5W
3524▲	4822 052 10109	10Ω 5% 0.33W
3525	4822 116 52252	180k 5% 0.5W
3526	4822 116 52175	100Ω 5% 0.5W
3527	4822 116 52188	27Ω 5% 0.5W
3528	4822 116 83864	10k 5% 0.5W
3529	4822 116 52207	1k2 5% 0.5W
3530	4822 050 22403	24k 1% 0.6W
3531	4822 116 52303	8k2 5% 0.5W
3532	4822 101 11191	10k 30% 0.1W Pot.
3533	4822 116 52238	12k 5% 0.5W
3534	4822 116 52297	68k 5% 0.5W
3535	4822 116 83864	10k 5% 0.5W
3536	4822 116 52257	22k 5% 0.5W
3537	4822 116 83864	10k 5% 0.5W
3538	4822 050 11002	1k 1% 0.4W
3539	4822 116 83864	10k 5% 0.5W
3540▲	4822 116 83027	0Ω22 5% 3W
3540	4822 117 11716	0Ω27 5% 3W
3541▲	4822 052 10102	1k 5% 0.33W
3542	4822 117 12621	330Ω 5% 5W
3543	4822 117 12621	330Ω 5% 5W
3544	4822 117 12076	5W 22k 5%
3545▲	4822 052 10159	15Ω 5% 0.33W
3553	4822 050 11002	1k 1% 0.4W
3554	4822 116 52175	100Ω 5% 0.5W
3555	4822 050 21604	160k 1% 0.6W
3556	4822 116 52175	100Ω 5% 0.5W
3557	4822 116 52234	100k 5% 0.5W
3558	4822 116 52263	2k7 5% 0.5W
3559	4822 101 11186	470Ω 30% 0.1W Pot
3560	4822 116 52256	2k2 5% 0.5W
3561	4822 116 83864	10k 5% 0.5W
3568	4822 116 52234	100k 5% 0.5W
3568	4822 116 52297	68k 5% 0.5W
3570	4822 116 52213	180Ω 5% 0.5W
3573	4822 053 12108	1Ω 5% 3W
3579	4822 116 80176	1Ω 5% 0.5W
3588▲	4822 052 11338	3Ω3 5% 0.5W
3589	4822 116 52235	1M 5% 0.5W
3590	4822 116 52284	47k 5% 0.5W
3591	4822 116 83872	220Ω 5% 0.5W
3592	4822 116 83864	10k 5% 0.5W
3593	4822 050 11002	1k 1% 0.4W
3594	4822 116 83864	10k 5% 0.5W
3595	4822 116 52303	8k2 5% 0.5W
3596	4822 050 11002	1k 1% 0.4W
3597	4822 116 83864	10k 5% 0.5W
3598	4822 116 52234	100k 5% 0.5W
3601	4822 116 81039	1Ω8 5% 0.5W
3601	4822 116 81154	2Ω2 5% 0.5W
3601	4822 116 81155	3Ω9 5% 0.5W
3602	4822 116 81039	1Ω8 5% 0.5W
3602	4822 116 81154	2Ω2 5% 0.5W
3602	5322 116 53564	3Ω3 5% 0.5W
3603	4822 116 81154	2Ω2 5% 0.5W
3603	4822 116 81155	3Ω9 5% 0.5W
3603	5322 116 53564	3Ω3 5% 0.5W
3604	4822 116 80176	1Ω 5% 0.5W
3605	4822 116 52186	22Ω 5% 0.5W
3606	4822 050 11002	1k 1% 0.4W
3607	4822 116 52226	560Ω 5% 0.5W
3608	4822 050 11002	1k 1% 0.4W
3609	4822 116 81682	2M 2 5% 0.5W
3610	4822 116 52249	1k8 5% 0.5W
3611	4822 116 52249	1k8 5% 0.5W
3612	4822 116 52283	4k7 5% 0.5W
3613	4822 116 83864	10k 5% 0.5W
3614	4822 116 52243	1k5 5% 0.5W
3615	4822 116 52276	3k9 5% 0.5W
3616	4822 116 52284	47k 5% 0.5W
3617	4822 116 83874	220k 5% 0.5W
3618	4822 116 83872	220Ω 5% 0.5W
3619	4822 116 83872	220Ω 5% 0.5W
3620	4822 116 52175	100Ω 5% 0.5W
3621	4822 116 80176	1Ω 5% 0.5W
3623	4822 116 52234	100k 5% 0.5W
3624	4822 116 52256	2k2 5% 0.5W
3752▲	4822 052 10828	8Ω2 5% 0.33W
3753▲	4822 052 10828	8Ω2 5% 0.33W
3754	4822 116 52256	2k2 5% 0.5W
3756	4822 116 52269	3k3 5% 0.5W
3757	4822 116 52279	4k3 5% 0.5W
3758	4822 116 52257	22k 5% 0.5W
3759	4822 116 52291	56k 5% 0.5W
3760	4822 050 11002	1k 1% 0.4W
3760	4822 116 52249	1k8 5% 0.5W
3761	4822 116 52256	2k2 5% 0.5W
3761	4822 116 52269	3k3 5% 0.5W
3762	4822 116 52206	120Ω 5% 0.5W
3762	4822 116 52283	4k7 5% 0.5W
3763	4822 116 52257	22k 5% 0.5W
3764	4822 116 52303	8k2 5% 0.5W
3765	4822 116 52283	4k7 5% 0.5W
3766	4822 116 52239	120k 5% 0.5W
3767	4822 116 52256	2k2 5% 0.5W

⌁

5400	4822 157 71401	27µH
5401	4822 157 71403	15µH
5410▲	4822 142 40351	Line drive transf.
5421▲	4822 157 63079	LC coil (21")
5421▲	4822 157 10992	LC coil (other)
5424▲	4822 157 53069	Balance coil
5430▲	4822 140 10595	LOT ELDOR (21")
5430▲	4822 140 10584	LOT CML16P
5463	4822 156 20915	33µH
5463	4822 157 52392	27µH
5480▲	4822 158 10728	Bridge coil. 11µH
5503▲	4822 142 40315	Mains filter
5525	4822 157 70826	2.4µH
5542	4822 157 70826	2.4µH
5544	4822 157 70826	2.4µH
5545	4822 157 70826	2.4µH
5550▲	4822 146 10366	Transf. CE425V
5550▲	4822 146 31469	transf. 10290250
5567	4822 157 70826	2.4µH
5572	4822 157 10452	10µH 10%
5572	4822 157 71466	2.2µH 20%
5750	4822 157 10452	10µH 10%
5751	4822 157 10452	10µH 10%

⊣▶

6423▲	4822 130 41275	BY228/20
6424▲	4822 130 41602	BYW95C/20
6425	4822 130 42488	BYD33D
6426	4822 130 42488	BYD33D
6441	4822 130 42488	BYD33D
6450	4822 130 34281	BZX79-C15
6457▲	4822 130 30621	1N4148
6460	4822 130 42488	BYD33D
6462	4822 130 70055	BYV27-400
6463	4822 130 70055	BYV27-400
6480▲	4822 130 30621	1N4148
6481▲	4822 130 30621	1N4148
6482	4822 130 34258	BZX79-C56
6501	4822 130 34281	BZX79-C15
6503	4822 130 34281	BZX79-C15
6507	4822 130 42488	BYD33D
6508	4822 130 42606	BYD33J
6509	4822 130 80655	BZX79-F2V4
6510▲	4822 130 31933	1N5061
6511▲	4822 130 31933	1N5061
6512▲	4822 130 31933	1N5061
6513▲	4822 130 31933	1N5061
6524▲	4822 130 31631	BYV10-20
6525	4822 130 42488	BYD33D
6530▲	4822 130 30621	1N4148
6542	4822 130 42606	BYD33J
6545	4822 130 41487	BYV95C
6560	4822 130 34174	BZX79-C4V7
6561	4822 130 42488	BYD33D
6562	4822 130 42488	BYD33D
6567	4822 130 70055	BYV27-400
6567	4822 130 81123	BY229F-800
6571▲	4822 130 31982	BYV27-100
6572	4822 130 80791	BYV28-200/20
6580	4822 130 42488	BYD33D
6590	4822 130 42606	BYD33J
6591▲	4822 130 30621	1N4148
6592	4822 130 83704	BZX79-F13
6600▲	4822 130 30621	1N4148
6601▲	4822 130 30621	1N4148
6763▲	4822 130 30621	1N4148
6764	4822 130 34281	BZX79-C15

⊣▭

7410	4822 130 42159	BF819
7420▲	4822 130 63271	BU2508AF
7421▲	4822 130 10779	BU1506DX
7450▲	4822 130 44197	BC558B
7480	4822 130 63726	MTP3055EFI
7507	4822 130 20296	BT137-600D
7520▲	4822 209 90025	MC44603P
7540	4822 130 63787	STP4NA60FI
7541	4822 130 63698	STH8NA60FI
7555	4822 209 81397	TL431CLP
7556▲	4822 130 10025	CNX82A
7560	4822 209 72042	MC78L05ACP
7561▲	4822 130 44197	BC558B
7569	4822 209 90281	L78MXX

7580▲	4822 209 80817	MC7800
7590	4822 130 20293	P0102BA
7591▲	4822 130 44197	BC558B
7592	4822 130 40937	BC548B
7593	4822 130 40937	BC548B
7600	4822 130 42446	BD536
7601	4822 130 60775	2SD1266P
7602▲	4822 130 41344	BC337-40
7603	4822 130 44568	BC557B
7604	4822 130 44568	BC557B
7605▲	4822 130 44197	BC558B
7606	4822 130 44568	BC557B
7760	4822 130 40937	BC548B
7761	4822 209 32641	TDA2616Q/N1
7763	4822 130 40937	BC548B

SMALL SIGNAL PANEL [B]

Various

	4822 265 41461	10P conn. S10,S11,S15
	4822 265 41451	9P conn. S33,S44
	4822 265 31246	6P conn. S41
	4822 267 31987	Pr.conn. S100
	4822 404 31487	Bracket SSP
	4822 404 31527	Bracket Nicam L
1000	4822 210 10691	Tuner UV916S
1000	4822 210 10731	Tuner U944S (UHF only)
1031	4822 242 82062	OFWL9454 38.9MHz (BGLI)
1032	4822 242 80303	OFWG9251M 38.9MHz (BGDK/BG)
1032	4822 242 81519	OFWK9260M 38.9MHz (I)
1032	4822 242 81854	OFWG9353M 38.9MHz (BGLI)
1100▲	4822 071 51001	Fuse 19372(100mA)
1116	4822 242 80295	OFWG3962M 38.9MHz (BG)
1116	4822 242 81436	OFWK3953M 38.9MHz (other)
1117	4822 242 10692	Xtal 4,433619 MHz
1122	4822 153 30025	Filt. TPS 6MHz (BGI)
1122	4822 242 72211	Filt. TPS 5.5MHz (other)
1651	4822 242 81946	Xtal 8MHz
1700	4822 242 81962	Xtal 13.875MHz

2004	4822 122 33797	47nF 20% 50V
2008▲	4822 124 40196	220µF 20% 16V (BGLI)
2008	4822 124 81029	100µF 20% 25V (other)
2009▲	4822 124 41579	10µF 20% 50V
2032	4822 124 40756	1µF 20% 100V
2033▲	5322 126 10223	4.7nF 10% 63V
2034▲	5322 126 10223	4.7nF 10% 63V
2036▲	5322 126 10223	4.7nF 10% 63V
2037▲	4822 124 41579	10µF 20% 50V
2037	4822 124 80791	470µF 20% 16V
2101▲	5322 126 10223	4.7nF 10% 63V
2102	5322 126 12415	18pF 5% 50V
2103	4822 126 13161	100nF 10% 25V
2104▲	5322 126 10223	4.7nF 10% 63V
2105▲	5322 126 10223	4.7nF 10% 63V
2106	4822 125 50062	1.4-10pF 250V
2108▲	5322 126 10223	4.7nF 10% 63V
2109	4822 124 40756	1µF 20% 100V
2111	4822 126 13159	180pF 5% 50V
2112	4822 126 13162	56pF 5% 50V
2113	5322 122 33537	1.2pF 5% 63V
2115	4822 126 13473	220nF 20% 50V
2116	4822 126 13473	220nF 20% 50V
2117	4822 126 13473	220nF 20% 50V
2119	4822 126 13473	220nF 20% 50V
2122	4822 126 13869	470nF 20% 16V
2124	4822 124 81029	100µF 20% 25V
2125▲	4822 122 33177	10nF 20% 50V
2126	4822 124 40756	1µF 20% 100V
2127▲	4822 124 41579	10µF 20% 50V
2128	4822 126 13161	100nF 10% 25V
2129	4822 126 13161	100nF 10% 25V
2132	4822 126 13161	100nF 10% 25V
2133	4822 126 13161	100nF 10% 25V
2136▲	5322 122 34123	1nF 10% 50V
2137▲	4822 126 10002	100nF 20% 25V
2138▲	4822 122 33177	10nF 20% 50V
2139▲	4822 122 33177	10nF 20% 50V
2140▲	5322 122 34123	1nF 10% 50V
2141	4822 126 13161	100nF 10% 25V
2142	4822 126 13161	100nF 10% 25V
2143	4822 126 13161	100nF 10% 25V
2144▲	5322 122 34123	1nF 10% 50V
2145▲	5322 122 34123	1nF 10% 50V
2154	4822 124 81286	47µF 20% 16V
2156	4822 126 13161	100nF 10% 25V
2157	4822 126 13161	100nF 10% 25V
2158▲	4822 124 40433	47µF 20% 25V
2160	4822 126 13689	18pF 1% 63V
2161	4822 126 13161	100nF 10% 25V (PAL)
2161	4822 126 13482	470nF 20% 16V (P/Sec.)
2162▲	5322 126 10223	4.7nF 10% 63V (P/Sec.)
2162	5322 126 10465	3.9nF 10% 63V (PAL)
2167	4822 124 81029	100µF 20% 25V
2169▲	4822 122 33177	10nF 20% 50V
2170▲	5322 126 10223	4.7nF 10% 63V
2171▲	4822 122 33177	10nF 20% 50V
2172	5322 122 32531	100pF 5% 50V
2173	4822 124 40756	1µF 20% 100V
2175▲	5322 122 34123	1nF 10% 50V
2176▲	5322 122 34123	1nF 10% 50V
2177	4822 121 70661	100N 5% 63V
2178	4822 126 13161	100nF 10% 25V
2179▲	4822 124 40433	47µF 20% 25V
2180	4822 126 13482	470nF 20% 16V
2181	4822 126 13482	470nF 20% 16V
2182	4822 126 13161	100nF 10% 25V
2196	5322 122 32448	10pF 5% 50V
2600▲	4822 124 41579	10µF 20% 50V
2601	4822 126 13161	100nF 10% 25V
2606▲	4822 122 33177	10nF 20% 50V
2607▲	4822 122 33177	10nF 20% 50V
2650	5322 122 31946	27pF 5% 63V
2651	5322 122 31946	27pF 5% 63V
2652	5322 122 32448	10pF 5% 50V
2653	5322 122 32448	10pF 5% 50V
2655▲	5322 122 34123	1nF 10% 50V
2659	4822 124 40756	1µF 20% 100V
2665▲	4822 126 10002	100nF 20% 25V
2685▲	4822 122 33177	10nF 20% 50V
2700▲	4822 122 33177	10nF 20% 50V
2702	5322 126 10794	220pF 5% 63V
2703▲	5322 122 32654	22nF 10% 63V
2704	5322 122 32481	15pF 5% 50V
2705	4822 122 32139	12pF 2% 63V
2707	5322 126 10794	220pF 5% 63V
2708▲	4822 126 10002	100nF 20% 25V
2709▲	4822 122 33177	10nF 20% 50V
2710	5322 122 32452	47pF 5% 63V
2711▲	4822 126 10002	100nF 20% 25V
2712▲	5322 122 32654	22nF 10% 63V
2715▲	4822 124 41579	10µF 20% 50V
2716▲	4822 124 41579	10µF 20% 50V
2800	4822 122 31175	1nF 10% 500V
2801	4822 122 31175	1nF 10% 500V
2805	4822 124 41596	22µF 20% 50V
2812	4822 126 13597	330pF 10% 500V
2813	4822 126 13597	330pF 10% 500V
2817	4822 126 13597	330pF 10% 500V
2830▲	4822 124 41579	10µF 20% 50V
2835	4822 122 31175	1nF 10% 500V
2836	4822 122 31175	1nF 10% 500V
2837▲	4822 126 10002	100nF 20% 25V
2840	4822 122 31175	1nF 10% 500V
2841	4822 122 31175	1nF 10% 500V
2847	4822 124 41596	22µF 20% 50V
2855	4822 126 13597	330pF 10% 500V
2856	4822 124 41596	22µF 20% 50V
2857	4822 126 13597	330pF 10% 500V
2858	4822 124 41596	22µF 20% 50V
2860	4822 126 13161	100nF 10% 25V
2875	5322 121 42386	100nF 5% 63V
2878	4822 126 13473	220nF 20% 50V
2879	4822 126 13473	220nF 20% 50V

3003	4822 051 20101	100Ω 5% 0.1W
3007	4822 117 10833	10k 1% 0.1W
3011	4822 051 20101	100Ω 5% 0.1W
3012	4822 051 20122	1k2 5% 0.1W
3014	4822 051 20223	22k 5% 0.1W
3030	4822 051 20223	22k 5% 0.1W
3031▲	4822 051 20472	4k7 5% 0.1W
3032▲	4822 051 20472	4k7 5% 0.1W
3033▲	4822 051 20472	4k7 5% 0.1W
3034	4822 051 20223	22k 5% 0.1W
3035	4822 117 11449	2k2 1% 0.1W
3036	4822 051 20223	22k 5% 0.1W
3037	4822 051 20223	22k 5% 0.1W
3038	4822 051 20223	22k 5% 0.1W
3039	4822 051 20223	22k 5% 0.1W
3040▲	4822 052 10479	47Ω 5% 0.33W
3100	4822 051 20682	6k8 5% 0.1W
3103	4822 116 52226	560Ω 5% 0.5W
3104	4822 117 10833	10k 1% 0.1W
3105	4822 116 52245	150k 5% 0.5W
3106	4822 051 20223	22k 5% 0.1W
3107	4822 116 52224	470Ω 5% 0.5W
3110	4822 051 20391	390Ω 5% 0.1W
3111	4822 116 52206	120Ω 5% 0.5W (P/Sec.)
3111	4822 116 83868	150Ω 5% 0.5W (PAL)
3112	4822 051 20331	330Ω 5% 0.1W
3113	4822 116 52235	1M 5% 0.5W
3117	4822 117 10353	150Ω 1% 0.1W
3119	4822 116 52175	100Ω 5% 0.5W
3121	4822 117 10833	10k 1% 0.1W
3122	4822 117 10833	10k 1% 0.1W
3124	4822 116 52291	56k 5% 0.5W
3125	4822 117 10833	10k 1% 0.1W
3126▲	4822 051 20153	15k 5% 0.1W
3127	4822 051 20561	560Ω 5% 0.1W
3128	4822 051 10102	1k 2% 0.25W
3130	4822 117 11449	2k2 1% 0.1W
3131	4822 051 20473	47k 5% 0.1W
3133	4822 051 10102	1k 2% 0.25W
3134	4822 051 20101	100Ω 5% 0.1W
3134	4822 051 20561	560Ω 5% 0.1W
3135	4822 051 20101	100Ω 5% 0.1W
3135	4822 051 20561	560Ω 5% 0.1W
3136	4822 051 20101	100Ω 5% 0.1W
3136	4822 051 20561	560Ω 5% 0.1W
3137	4822 117 11449	2k2 1% 0.1W
3138	4822 117 11449	2k2 1% 0.1W
3139	4822 117 11449	2k2 1% 0.1W
3140	4822 051 20274	270k 5% 0.1W
3141	4822 116 83872	220Ω 5% 0.5W
3142	4822 116 83872	220Ω 5% 0.5W
3143	4822 051 20221	220Ω 5% 0.1W
3144	4822 051 20829	82Ω 5% 0.1W
3145	4822 051 20829	82Ω 5% 0.1W
3146	4822 051 20829	82Ω 5% 0.1W
3149	4822 116 52176	10Ω 5% 0.5W
3150	4822 116 83864	10k 5% 0.5W
3155	4822 116 83872	220Ω 5% 0.5W
3156▲	4822 051 20109	10Ω 5% 0.1W
3162▲	4822 052 10478	4Ω7 5% 0.33W
3164	4822 051 20104	100k 5% 0.1W (PAL)
3164	4822 051 20183	18k 5% 0.1W (P/Sec.)
3169▲	4822 052 10478	4Ω7 5% 0.33W
3170	4822 050 11002	1k 1% 0.4W
3171	4822 117 10833	10k 1% 0.1W
3172	4822 117 10833	10k 1% 0.1W
3173	4822 051 20272	2k7 5% 0.1W
3174	4822 117 10833	10k 1% 0.1W
3175	4822 050 11002	1k 1% 0.4W
3176	4822 050 11002	1k 1% 0.4W
3177	4822 117 10356	39k 1% 0.1W
3178	4822 117 10833	10k 1% 0.1W
3179	4822 051 20333	33k 5% 0.1W
3181	4822 116 52175	100Ω 5% 0.5W
3182	4822 116 52175	100Ω 5% 0.5W
3186▲	4822 052 10478	4Ω7 5% 0.33W
3187	4822 051 20392	3k9 5% 0.1W
3188	4822 051 20334	330k 5% 0.1W
3189	4822 051 20334	330k 5% 0.1W
3190▲	4822 051 20332	3k3 5% 0.1W
3191	4822 050 11002	1k 1% 0.4W
3192	4822 051 20562	5k6 5% 0.1W
3193▲	4822 051 20008	0Ω (jumper)
3196	4822 051 20101	100Ω 5% 0.1W
3602	4822 116 83864	10k 5% 0.5W
3603	4822 051 20331	330Ω 5% 0.1W
3604	4822 116 83864	10k 5% 0.5W
3605	4822 116 52283	4k7 5% 0.5W
3606	4822 116 83864	10k 5% 0.5W
3607	4822 116 52224	470Ω 5% 0.5W
3608	4822 116 52283	4k7 5% 0.5W
3610	4822 116 52283	4k7 5% 0.5W
3611	4822 116 52264	27k 5% 0.5W
3612	4822 051 20512	5k1 5% 0.1W
3613▲	4822 051 20472	4k7 5% 0.1W
3614▲	4822 051 20472	4k7 5% 0.1W
3616▲	4822 051 20472	4k7 5% 0.1W
3617▲	4822 051 20472	4k7 5% 0.1W
3621	4822 116 52283	4k7 5% 0.5W
3623▲	4822 051 20472	4k7 5% 0.1W
3624▲	4822 051 20472	4k7 5% 0.1W
3627	4822 116 52175	100Ω 5% 0.5W
3660	4822 116 83864	10k 5% 0.5W
3661	4822 051 20224	220k 5% 0.1W
3662	4822 050 11002	1k 1% 0.4W
3663	4822 117 11139	1k5 1% 0.1W
3664	4822 116 52231	820Ω 5% 0.5W
3666	4822 117 11139	1k5 1% 0.1W
3669	4822 117 11139	1k5 1% 0.1W
3670▲	4822 051 20472	4k7 5% 0.1W
3680▲	4822 051 20472	4k7 5% 0.1W
3681	4822 051 20101	100Ω 5% 0.1W
3682	4822 051 20101	100Ω 5% 0.1W
3683	4822 117 11449	2k2 1% 0.1W
3684	4822 117 11449	2k2 1% 0.1W
3685	4822 116 52283	4k7 5% 0.5W
3686	4822 117 10833	10k 1% 0.1W
3687	4822 051 20473	47k 5% 0.1W
3688	4822 116 52175	100Ω 5% 0.5W
3689	4822 116 52284	47k 5% 0.5W
3691▲	4822 051 20472	4k7 5% 0.1W
3692▲	4822 051 20472	4k7 5% 0.1W
3693	4822 116 52283	4k7 5% 0.5W
3694	4822 116 52228	680Ω 5% 0.5W
3700	4822 051 20101	100Ω 5% 0.1W
3701	4822 051 20331	330Ω 5% 0.1W
3702	4822 050 11002	1k 1% 0.4W
3703	4822 051 20393	39k 5% 0.1W
3704▲	4822 051 20008	0Ω (jumper)
3705	4822 051 10102	1k 2% 0.25W
3706	4822 116 52175	100Ω 5% 0.5W
3707	4822 116 52175	100Ω 5% 0.5W
3708	4822 051 20221	220Ω 5% 0.1W
3709	4822 051 10102	1k 2% 0.25W
3710	4822 116 83961	6k8 5%
3714	4822 116 83872	220Ω 5% 0.5W
3715	4822 116 83872	220Ω 5% 0.5W
3716	4822 051 20221	220Ω 5% 0.1W
3800	4822 116 52219	330Ω 5% 0.5W
3801	4822 116 52219	330Ω 5% 0.5W
3802	4822 051 20224	220k 5% 0.1W
3803	4822 051 20224	220k 5% 0.1W
3805▲	4822 052 10109	10Ω 5% 0.33W
3806	4822 116 52224	470Ω 5% 0.5W
3808	4822 051 20221	220Ω 5% 0.1W
3810	4822 116 52199	68Ω 5% 0.5W
3812	4822 116 52289	5k6 5% 0.5W
3813	4822 116 52289	5k6 5% 0.5W
3814	4822 116 52201	75Ω 5% 0.5W
3815	4822 116 52202	82Ω 5% 0.5W
3816	4822 116 83961	6k8 5%
3817▲	4822 051 20472	4k7 5% 0.1W
3818	4822 116 52201	75Ω 5% 0.5W
3819	4822 116 52202	82Ω 5% 0.5W
3820	4822 116 52202	82Ω 5% 0.5W
3821	4822 116 52175	100Ω 5% 0.5W
3822	4822 116 52219	330Ω 5% 0.5W
3823	4822 116 52202	82Ω 5% 0.5W
3824	4822 116 52201	75Ω 5% 0.5W
3825	4822 116 52201	75Ω 5% 0.5W
3826▲	4822 051 20121	120Ω 5% 0.1W
3827	4822 116 52219	330Ω 5% 0.5W
3828	4822 050 11002	1k 1% 0.4W
3830	4822 051 20223	22k 5% 0.1W
3831	4822 117 11449	2k2 1% 0.1W
3832	4822 051 20471	470Ω 5% 0.1W
3833	4822 051 20471	470Ω 5% 0.1W
3834	4822 051 20471	470Ω 5% 0.1W
3835	4822 116 52219	330Ω 5% 0.5W
3836	4822 116 52219	330Ω 5% 0.5W
3837	4822 116 83864	10k 5% 0.5W
3840	4822 116 52219	330Ω 5% 0.5W
3841	4822 116 52219	330Ω 5% 0.5W
3842	4822 051 20224	220k 5% 0.1W
3843	4822 051 20224	220k 5% 0.1W
3847▲	4822 052 10109	10Ω 5% 0.33W
3848	4822 116 52224	470Ω 5% 0.5W
3850	4822 051 20471	470Ω 5% 0.1W
3851	4822 051 20821	820Ω 5% 0.1W
3852	4822 051 20681	680Ω 5% 0.1W
3853	4822 116 52199	68Ω 5% 0.5W
3855	4822 116 80175	4k7 5% 0.5W
3856	4822 051 20224	220k 5% 0.1W
3857	4822 116 80175	4k7 5% 0.5W
3858	4822 051 20224	220k 5% 0.1W
3859	4822 116 83961	6k8 5%
3860▲	4822 051 20472	4k7 5% 0.1W
3863	4822 116 52201	75Ω 5% 0.5W
3865	4822 116 52202	82Ω 5% 0.5W
3866	4822 116 52219	330Ω 5% 0.5W
3867	4822 050 11002	1k 1% 0.4W
3869	4822 116 52202	82Ω 5% 0.5W
3875	4822 116 83872	220Ω 5% 0.5W
3879	4822 116 52175	100Ω 5% 0.5W
3888	4822 051 20224	220k 5% 0.1W